Advant® OCS
with Master software

Advant Engineering Products

Product Guide

3BSE 014 966R501

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Chapter 1 Overview

Advant Engineering Products implement ABB's approach to a scalable automation project engineering. From the independent products needed for quick and efficient controller configuration, for example AMPL Control Configuration, to Advant Engineering Workplace which serves as an integrated platform for all the tools needed to manage, design, engineer, install, commission and maintain industrial automation plants with Advant OCS with maximum productivity and quality. The smaller independent products easily integrate into the total concept which addresses the needs of both the engineering and maintenance phases, which means that it offers important benefits to both application development and plant maintenance engineers.

1.1 Product Benefits

Advant Engineering Products support the different tasks in the engineering process. They do so by letting individual products be combined to fit the team of persons working with the whole range of the engineering, from single controller configuration to projects handling for a complete plant.

Object Oriented Engineering

The Advant Object concept is the common base for the set of tools providing efficient engineering methods to support process automation projects. Each project can be broken down into smaller and smaller components called Advant Objects. At the low level of the project structure these Advant Objects can be individual signals, connection terminals, motors, etc. Advant Objects are filled with information that describes different aspects of the corresponding real world object. These Aspects range from CAD drawings and functional descriptions to control programs. For easy access to the information there are different Views on the Aspects. The ability to include dynamic data in the Aspects gives the concept a very high flexibility.

The fact that Advant Engineering Products and its components support this concept gives the engineer the means to handle projects of different size and scope in an efficient manner while maintaining high quality standards. Import of existing data into the engineering environment is well covered, allowing coexistence with existing tools and methods. To achieve a high engineering efficiency and quality one time data entry is supported.

Teamwork

Advant Objects promote teamwork of qualified personnel from different areas. By supporting multiple access to Advant Objects it is possible for several engineers to work with the Aspect of their speciality on the same object at the same time. By using the licensing flexibility, the individual workplaces can be tailored according to the needs of each engineer in the team.

Reuse

Engineering becomes more efficient when using Advant Objects. This is mainly due to good reuse support and extensive import functionality. Dynamic solutions in libraries can be merged with new engineering data., thereby creating completely new applications for the current project.

Lifetime Information Support

When the engineering is done and the plant is started, Advant Engineering Workplace acts as an excellent information data base. The possibility to add more Aspects to an Advant Object makes it is easy to keep the information updated and collect all the relevant information, about the object, in one place. This gives a certainty that, when needed, the information is accessible and complete.

Advant Engineering Products are designed to help engineers build and maintain industrial automation plants more efficiently, at lower costs and with better engineering quality. It does so by providing an integrating platform for all the disciplines, tools and tasks involved, throughout the life cycles of these plants. In short, Advant Engineering Products helps industrial automation engineers do a better job faster.

1.2 The Advant Engineering Products

There are packages within Advant Engineering Products each built up by different tools. The tools, called Builders, are used for efficient entry of engineering data and graphical application programming of controllers. Since documentation is an important part in a project, functions for creation, managing, and printing of project documents are available. For electrical diagram handling there are products based on AutoCAD. There are also durable industrial PCs ideal for fieldwork.

Products which support Advant Objects running on Windows NT

- Advant Engineering Workplace, serves as a cooperation base for the engineering products
- AMPL Control Configuration, for configuration of Advant Controller 100 and 400 Series
- Computer Aided Electrical Engineering, for electrical CAD engineering
- Advant Station 100 Series Engineering Station, a durable PC for field work

NOTE

The minimum setup needed to configure an Advant Controller is AMPL Control Configuration.

1.3 Advant Engineering Workplace

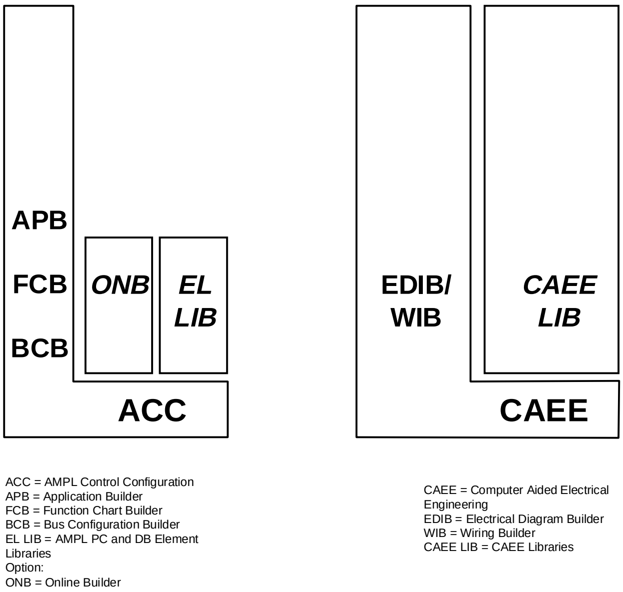
Advant Engineering Workplace establishes the engineering environment for the AdvaBuild Engineering Software under Windows NT.

Further engineering products can be added and extend the basic functionality of the Advant Engineering Workplace. Together they can be run in a cooperating mode, Figure 1-2. These products are:

- AMPL Control Configuration
- Computer Aided Electrical Engineering (CAEE).

NOTE

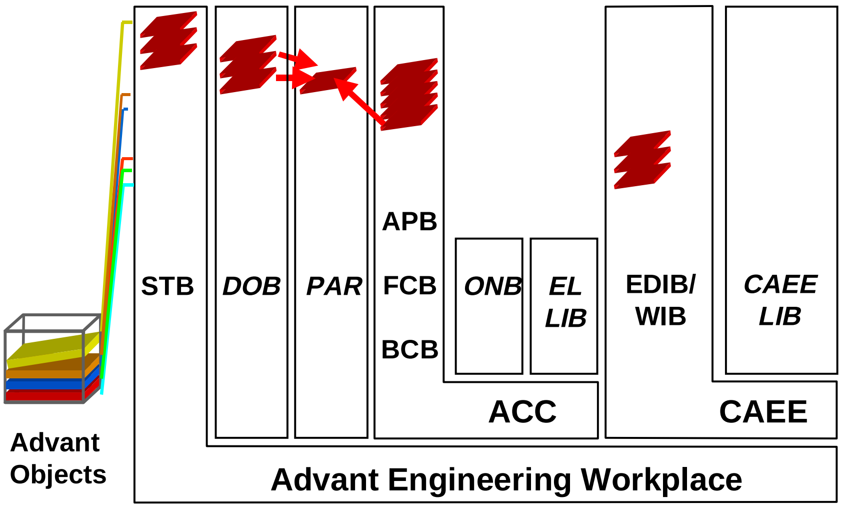
The two products above are stand-alone products as well. Advant Engineering Workplace is not needed to run either of them but in the cooperating mode there is more functionality and advantages, Figure 1-1 and Figure 1-2.



ACC = AMPL Control Configuration
APB = Application Builder
FCB = Function Chart Builder
BCB = Bus Configuration Builder
EL LIB = AMPL PC and DB Element Libraries
Option:
ONB = Online Builder

CAEE = Computer Aided Electrical Engineering
EDIB = Electrical Diagram Builder
WIB = Wiring Builder
CAEE LIB = CAEE Libraries

Figure 1-1. ACC and CAEE in independent mode



STB = Structure Builder
Options:
DOB = Document Builder
PAR = Parameter Builder

ACC = AMPL Control Configuration
APB = Application Builder
FCB = Function Chart Builder
BCB = Bus Configuration Builder
EL LIB = AMPL PC and DB Element Libraries
Options:
ONB = Online Builder:

CAEE = Computer Aided Electrical Engineering
EDIB = Electrical Diagram Builder
WIB = Wiring Builder
Addition:
CAEE LIB = CAEE Libraries

Figure 1-2. Advant Engineering Products in cooperating mode

Two options which extend the functionality of Advant Engineering Workplace are available, Figure 1-2:

- Option Parameter Builder which handles the import and editing of engineering data used as parameters by the other AdvaBuild Engineering Software products.
- Option Document Builder which integrates office tools like Microsoft Word and Microsoft Excel with Advant Engineering Workplace. It also offers a document registry based on Microsoft Access. These features gives the user an excellent tool for the creation and administration of documents.

1.3.1 Product Benefits and Features

Some features of Advant Engineering Workplace, in cooperating mode together with the options:

- Multiple Structuring, that is, different views of the project
- Filter functions for easy retrieval of data
- Copy/Paste of Advant Objects including all its Aspects
- Automatic creation of parameterized Advant Objects from libraries and spread sheets gives extensive reuse support
- Dynamic documents, automatically updated when duplicated and given to another Advant

Object

- Flexible parameter handling, where parameters are available for other Aspects
- Auto generated reports
- I/O allocation
- Printing

1.4 AMPL Control Configuration

AMPL Control Configuration is a suite of builders necessary to configure Advant Controller 100 and 400 Series with Master software. The products are based on Windows NT.

Two options which extend the functionality of AMPL Control Configuration are available, Figure 1-1:

- Option On-line Builder for on-line configuration and download of the Advant Controller 400 Series applications.
- Option AMPL PC and DB Element Libraries including the PC and DB Element Libraries and reference manuals for Advant Controller 400 Series (Advant Controller 410 and Advant Controller 450) and Advant Controller 100 Series (Advant Controller 110, Advant Controller 70 and Advant Controller 55).

1.4.1 Product Benefits and Features

AMPL Control Configuration provides, together with the options, the following features:

- Administration of nodes, Circuits and Type Circuits simplifying project start-up and reuse
- Off-line editing with powerful cut/copy/paste
- On-line editing for rapid program modifications
- Target system control for easy testing of installed system
- Module diagnosis

In cooperating mode it supports much more features like:

- Support for the Advant Object concept including
  - parameterized data in Type Circuits used in Circuit aspects and DBElement aspects
  - efficient commands acting on sets of these aspects

1.5 Computer Aided Electrical Engineering

Electrical Diagram Builder - Wiring Builder is available for creation and administration of circuit diagrams, loop diagrams, connection diagrams, layout diagrams, I/O diagrams and overview diagrams and efficient handling and documentation of the plant wiring.

As addition, CAEE Libraries contains symbol libraries and format libraries.

1.5.1 Product Benefits and Features

Computer Electrical Engineering provides, in cooperating mode together with the options, the following features:

- Support for the Advant Object concept including parameterized data
- Effective symbol handling for better reuse
- Extensive drawing help which shortens drawing time
- Semi-automatic allocation of connections to cables reduces work and mistakes
- Effective article import via standardized format to reduce work and mistakes
- System neutral, standardized description of engineered data to be imported and used by the customer’s maintenance system

1.6 Advant Station 100 Series Engineering Station

Advant Station 120 Engineering Station for Windows NT (PCI) and Advant Station 130 Engineering Station for Windows NT (ISA) are durable PCs which satisfy the Advant OCS environmental specifications. Advant Station 100 Series Engineering Stations are ideal for fieldwork, including off-line engineering, on-line programming, maintenance and fault tracing.

Advant Station 100 Series Engineering Boards

Advant Station 100 Series Engineering Boards allows the use of an appropriate IBM compatible PC together with AMPL Control Configuration products for on-line configuration of Advant Controller 400 Series. This will give a similar functionality to an Advant Station 100 Series Engineering Station.

The Advant Station 100 Series Engineering Boards are available in 2 different variants:

- Advant Station 100 Series Engineering Board (PCI), which allows direct connection to MasterBus 300.
- Advant Station 100 Series Engineering Board (ISA)

1.6.1 Product Benefits and Features

In addition to the benefits and features for AMPL Control Configuration, Advant Station 100 Series Engineering Stations are also very sturdy and can handle the rough treatment in the field. In a less hostile environment a PC together with any of the Advant Station 100 Series Engineering Boards can be used. If the Advant Station 100 Series Engineering Board (PCI) is used the configuration work can be made from the office via MasterBus 300.

Chapter 2 Functional Description

2.1 Introduction

This chapter describes the functionality of AdvaBuild Engineering Software for Windows NT. The focus within this chapter is on a coherent description that demonstrates the cooperation of the individual Builders during the engineering process. AdvaBuild Engineering Software supports basically two types of projects:

- Advant OCS (for Master) oriented engineering projects
  - This project scope is focused to supply the controller configuration of Advant OCS.
- Plant engineering projects including electrical diagram handling
  - Plant engineering projects cover – in addition to Advant OCS engineering – further engineering activities like electrical CAD.

Depending on the type of project the engineering environment can be tailored in terms of products and options.

2.2 AdvaBuild Engineering Software Overview

AdvaBuild Engineering Software comprises a set of cooperating products supporting the Advant Object concept for the engineering of plant projects. For a dedicated project scope a set of products may be configured out of the complete set. Products are either base units or options to base units. The following products are available:

Advant Engineering Workplace

Advant Engineering Workplace is an integration platform providing the possibility to add further AdvaBuild Engineering Software products like the AMPL Control Configuration (see below). It is used to administer projects and users. In addition it offers functions to structure the engineering data and to navigate through the data.

It includes the following components:

- Structure Builder for navigation and structuring
- Advant Engineering Server for storing the engineering data and project management

Options for Advant Engineering Workplace

- Parameter Builder for handling of common parameter data to be used by the other Advant Engineering Products
- Document Builder which integrates office tools like Microsoft Word and Microsoft Excel. It offers a document register based on Microsoft Access.

Libraries for Advant Engineering Workplace

- Advant Object Library for Advant Controllers containing example Advant Objects representing different I/O signals and boards and entities like valves, motors, drive systems and control loops
- Example Project as an example on how Advant Objects from the Advant Object Library could be used in projects.

AMPL Control Configuration

The tool set for the control configuration related tasks. It includes the following components:

- Application Builder for the navigation within the OCS configuration data
- Function Chart Builder for configuration and on-line access to Advant Controllers
- Bus Configuration Builder for configuration of AF100 OPC Server and AdvaSoft for Windows, as well as for Advant Fieldbus 100 wide checks and overviews.

Libraries for AMPL Control Configuration

- AMPL PC and DB Element Libraries and reference manuals for the Advant controllers

Options for AMPL Control Configuration

- On-line Builder for on-line access to Advant Controller 400 Series

Computer Aided Electrical Engineering (CAEE)

The tool set for creation and administration of circuit diagrams, loop diagrams and layout diagrams. It includes the component Electrical Diagram Builder - Wiring Builder.

- Electrical Diagram Builder for creation of electrical diagrams.
- Wiring Builder for wiring handling and documentation

Libraries for Computer Aided Electrical Engineering

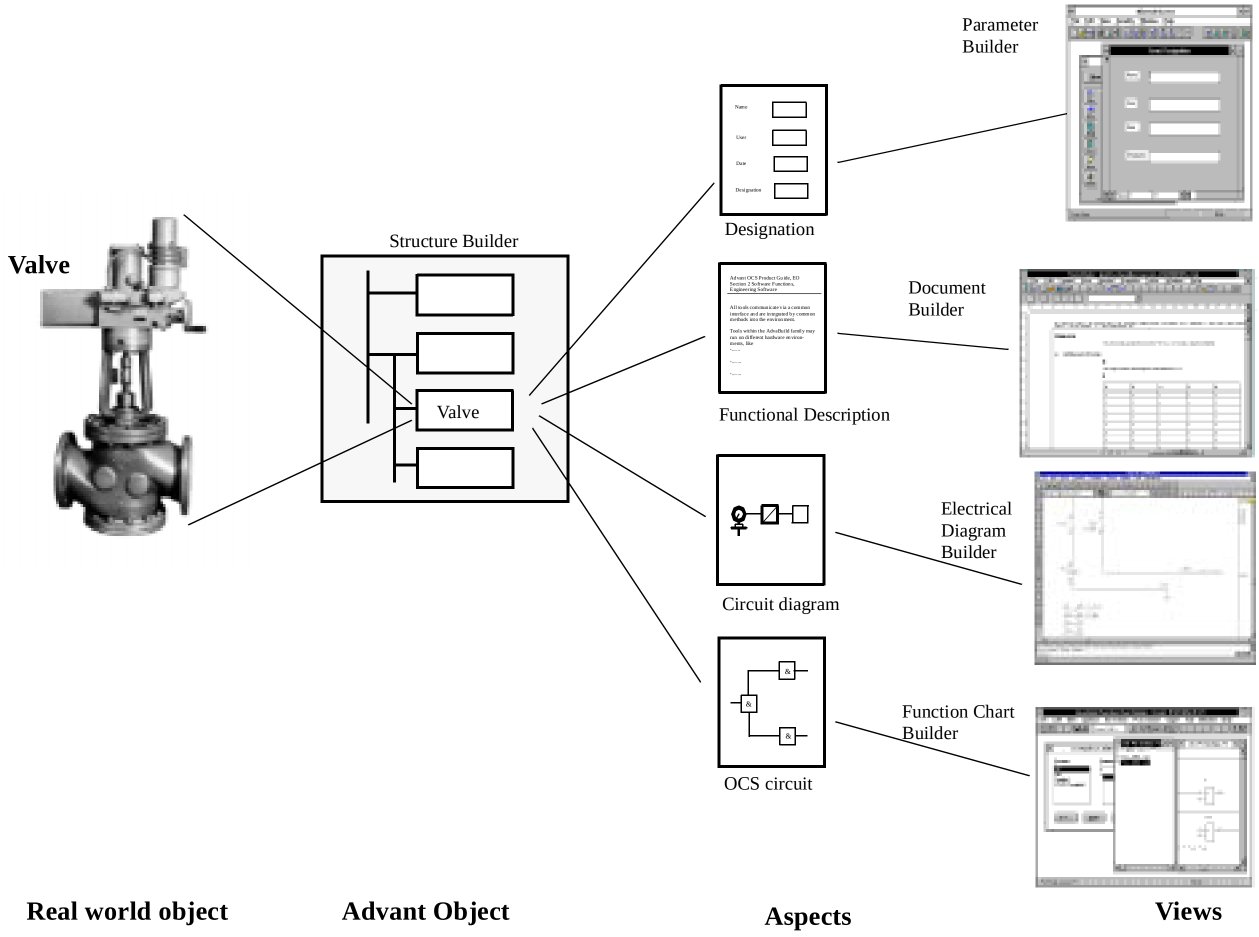
- Basic Symbol Libraries according to IEC 617 and IEC 11714.

2.3 Advant Object Concept

A real world object like a valve or something else relevant for engineering is represented in AdvaBuild Engineering Software as an Advant Object. An Advant Object contains data describing its different aspects. For example, in order to describe a valve, different aspects have to be considered:

- The control logic describing its control functionality
- Data sheets describing the physical and electrical characteristics of the valve
- Reference designations with information about its location and function in the plant.

This data describes the different aspects of the valve. Aspects are the actual engineering data while the Advant Object keeps the individual aspects of a plant object together



Advant OCS Product Guide, EO
Section 2 Software Functions,
Engineering Software

All tools communicate via a common interface and are integrated by common methods into the environment.

Tools within the AdvaBuild family may run on different hardware environments, like

-......

-......

-......

Figure 2-1. Advant Objects - The reality and the model

As the aspects contain the data, an aspect is “opened” to get access to its data. In some cases there are several “views” on the aspect data. For example, a control logic aspect can be opened in the function chart view or in a textual source code view, which are two different views of the same control logic aspect. Advant Objects are related to each other according to the structures in the plant. The same Advant Object can be put into different structures:

- Functional structure of the plant.
- Structure of the control system (in terms of networks, nodes, field busses, stations).
- Location oriented structure (what equipment is located where in the plant).

Figure 2-2 illustrates a functional structure which is derived from the plant to be engineered.

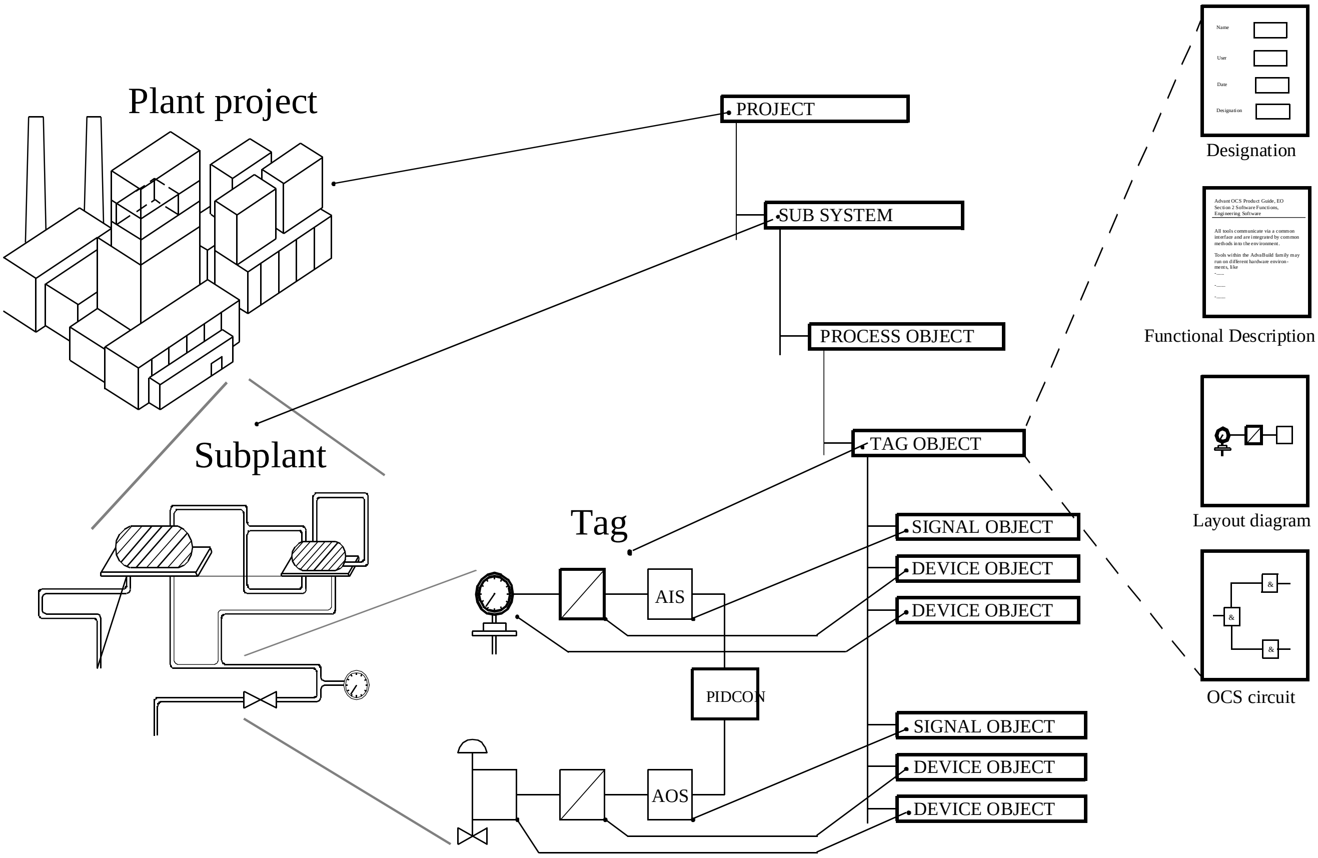


Figure 2-2. Example of a functional structure

Based on the hierarchical structuring capabilities AdvaBuild Engineering Software supports the handling of reference designations in accordance with IEC 1346 and IEC 1082. The reference designations can be referred to from aspects like circuit diagrams.

The Advant Object concept covers the whole life time of a plant including the engineering phase as well as the operational phase and it helps to manage the data in an efficient and intuitive manner.

2.4 The Engineering Advantage

Advant Engineering Products support the user throughout the engineering process. This process can be divided into phases, where work is not restricted to one given work flow model. Data can be entered whenever it is available and refined in later phases, when more details are available.

Project Phases

The engineering process for a project can be divided into several phases:

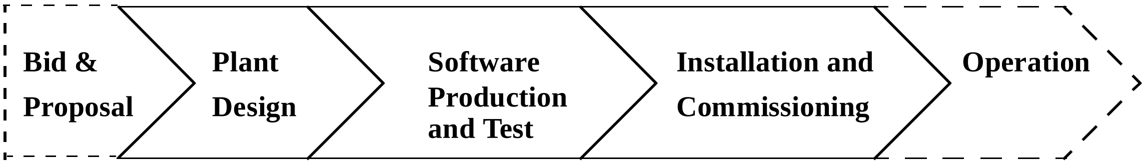


Figure 2-3. Main engineering phases

Main Phases

Advant Engineering Products focus on an efficient support for plant design, software production, test, installation and commissioning. Even the operational phase is supported.

- Bid and Proposal
  - Technical and commercial frame conditions for the project are defined. Some engineering data is already created in order to prepare a proposal. With AdvaBuild Engineering Software it is possible to import this data in order to continue the engineering work. It is not necessary to reenter the data manually in later phases.
- Plant design
  - Basic structures are defined and agreements are made on which standards to follow. An important aspect is to identify existing standard solutions that can be reused in the project. Reusing standard solutions is a key efficiency and quality factor and considered more detailed below. Standard solutions are implemented as Advant Objects.
- Software Production and Test
  - The bulk work for the OCS-part of the projects is to be done in this phase. If the plant design is made in a structured way and standard solutions are available, the engineering work can be done efficiently. Also the quality is increased if proven solutions are reused. This phase will also be further detailed below.
- Installation and Commissioning
  - This phase occurs on site and may require frequent change/update cycles.
    Up to date information is very important.
- Operation
  - In the operational phase of a plant it is more important to retrieve and to modify data in an efficient way than to enter big volumes of new data. How to use AdvaBuild Engineering Software in the operational phase is described in Section 2.5, The Operational Advantage.

2.4.1 Key Steps in Advant OCS Configuration

The following example is devoted to the OCS engineering. It highlights key steps performed during the engineering and demonstrates significant features of the Advant Engineering Products.

Figure 2-4 illustrates typical steps relevant for the software production phase:

1. The import of data provided in an Microsoft Excel sheet. The data are taken for example from the bid and proposal or plant design phases.
2. During the import of the data, Advant Objects are automatically created and the imported data is stored in the Parameter Builder
3. The Circuit aspects of the Advant Objects which contain the control logic are then located in the AMPL program of Function Chart Builder
4. Finally the AMPL program for the controller is generated and downloaded.

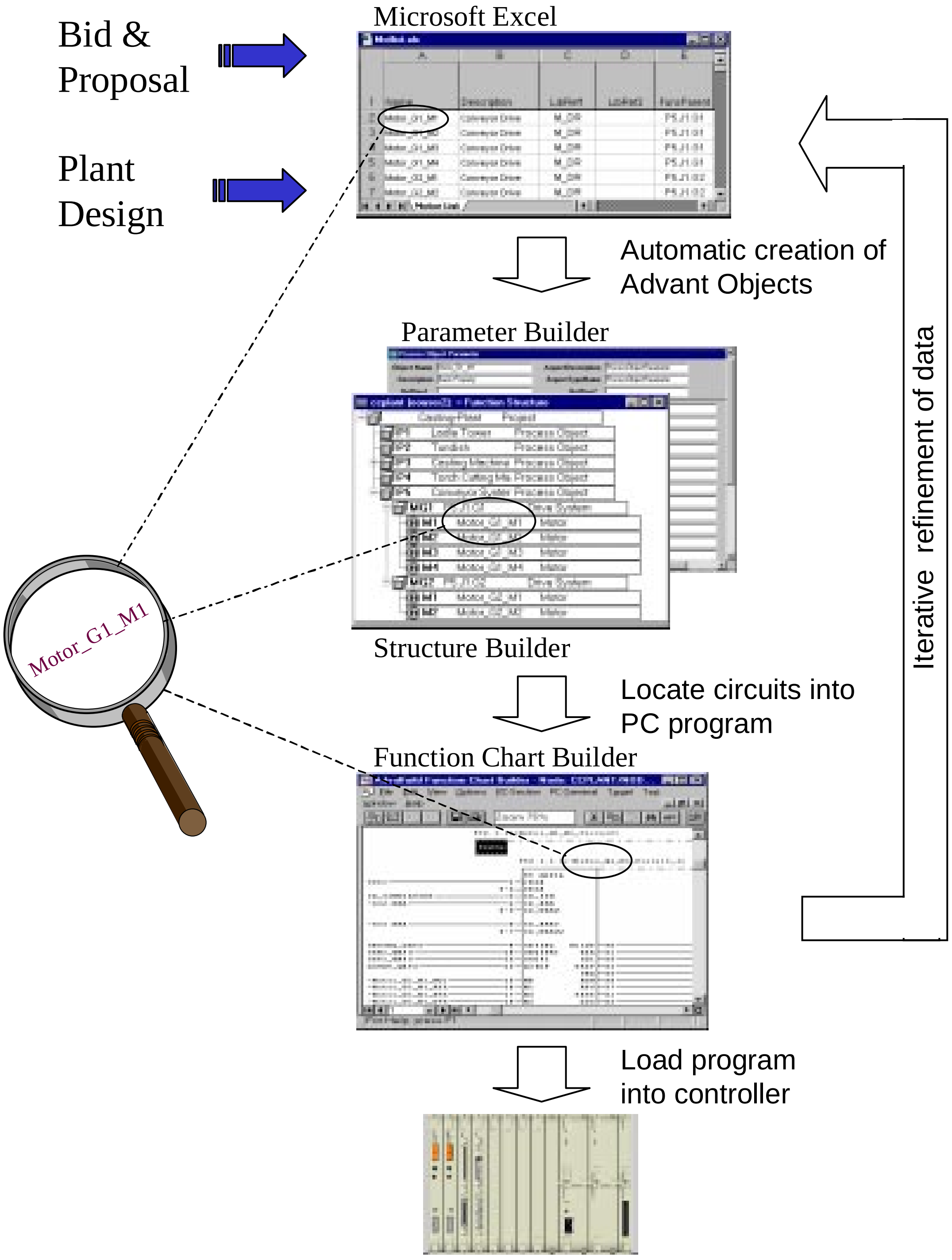


Figure 2-4. Typical workflow scenario for software production

Reusing Data from the “Bid and Proposal” Phase

Data created in the “Bid and Proposal” phase can be imported to the engineering system, even if not yet complete. Several import formats are supported, for example, for motor and signal lists.

Automatic Creation of Advant Objects

When the data is imported, Advant Objects can automatically be created based on standard solutions provided in a library. A library reference is specified which identifies the standard solutions to use when the actual objects are created. For example, the first line in the motor list specifies the motor “Motor_G1_M1” which is derived from a standard solution called “M_DR”.

During import, Advant Objects can also automatically be placed into structures as depicted in the Structure Builder window. All attributes characterizing the motors like “power” or “speed” are saved in the Parameter Builder during the import. The number of attributes and their meaning is freely definable.

Once stored in the Parameter Builder, this data can be referred to by other aspects. The same applies to data stored in the Structure Builder as for example the name of an object. The automatic creation of Advant Objects is controlled in two ways:

- By identifying the standard solution to be used in order to create the Advant Objects in the actual project.
- By designing the standard solution in the library. For example, the designer of the standard solution for a motor control can decide to add a functional specification aspect to the motor object and to add an electrical circuit diagram.

Locate Circuits into AMPL Programs

When an Advant Object - for example a motor - is created, a Circuit aspect for the control logic of this motor may also be created, resulting from the standard solution the motor object has been derived from. The Circuit aspect represents the control logic which describes how to control the motor at runtime. This Circuit aspect will eventually be executed on an Advant controller within an AMPL program.

Locating the Circuit into the AMPL program is done in a very intuitive way: The Advant Object is selected in the Structure Builder and dragged into the AMPL program. Here it is dropped at the desired AMPL program location and the Circuit aspect of the Advant Object is included in the AMPL program. Instead of dragging the circuit into the AMPL program, you may also use the Locate Circuit command on the Circuit aspect or the Node Control Software aspect. You define where to insert the circuit via reference designations of the Advant Object in the OCS Structure. In both cases multiple objects can be selected and handled.

A Circuit aspect normally contains a Type Circuit instance - a parameterized reusable solution for control logic. When a Circuit aspect is inserted into the AMPL program, the Type Circuit parameters are substituted by the actual values stored in the Structure Builder or Parameter Builder. The source where the actual value is fetched from can be specified for each single parameter. For example, a parameter reference can point to the name of an Advant Object or to its reference designations.

Iterations in the Engineering Process

In the beginning, the data of the bid and proposal phase, used for the import, is often not yet complete. Even with incomplete data it is possible to import the data and automatically create Advant Objects. During the progress of the engineering process, data get more and more refined and completed. At any time, data can be re-imported and the steps above can be repeated.

2.4.2 Electrical Engineering

If engineering projects, in addition to Advant OCS engineering, include further activities, like electrical engineering, powerful functions are available for:

- Handling of reference designations
- Building/refining electrical diagrams, such as circuit diagrams, connection diagrams, layout diagrams, and overview diagrams
- Updating the contents of circuit diagrams with actual data from the Structure Builder (for example reference designations, object names) and vice versa
- Article handling and creating reports, e.g. parts lists
- Building/using/split and merge symbol libraries
- Wiring and the related reports, e.g. cable and connection reports.

2.5 The Operational Advantage

In the operational phase of a plant it is more important to retrieve and modify data in an efficient way, than to enter big volumes of new data. Data retrieval is supported by several Builders in a flexible way. In the Structure Builder it is possible to search for Advant Objects according to certain filter criteria like type or name. If the exact name of an object is not known wildcards can be used within the filter criteria.

Once an Advant Object is found—by performing a filter operation in the Structure Builder—the operator has direct access to the data of the Advant Object found.

The following example describes a typical scenario in the operational phase and by that emphasizes some valuable features offered by the AdvaBuild Engineering Software.

Usage Scenario

During plant operation there may be a problem signalled at the operator station. A plant object like the motor “Motor_G1_M1” indicates a failure.
In order to trace the problem and to overview potential consequences this failure could have for the operation of the plant, several questions have to be answered, like:

- Where is this motor located in the plant?
- What is the function of the motor in the plant?
- How is the motor connected through the field area to the control system?
  The cause of the problem could also be in the connection path, for example, a cable break.

Based on the information that the problem is about a motor called “Motor_G1_M1” the related Advant Object can be retrieved in the Structure Builder. From the Advant Object all its configuration data can be accessed or a functional description or the circuit diagram telling the operator how the motor is connected via cables and marshaling bars to the control system.

In some cases this information is not specified for an individual motor but for a complete superior unit like a conveyor system. In this case the functional structure is of interest. Starting from the motor object found in the functional structure, the superior functional subsystem the motor belongs to, can be identified. Now all configuration data of this Advant Object - the conveyor system - can be accessed.

2.6 Architectural Overview

The AdvaBuild Engineering Software consists of a set of cooperating tools, called Builders, supporting the Advant Object concept in Advant OCS and plant engineering projects. Some Builders are grouped as a product to supply a certain functionality.

Builders may consist of a client and a server part. A Builder stores its specific data on the local hard disk and/or on the data server. This split is useful as different clients can access common data on the server. The client/server structure also helps to distribute the load between the client and the server PCs.

The Builders can cooperate with each other via a set of common methods. When Builders interact as described above they are called cooperating. Nevertheless it is possible to run individual Builders without the common methods. Then they are running in the independent mode.

Cooperating Mode

When working in the cooperating mode, the Builders can use data from each other. Advant Engineering Workplace is a prerequisite for cooperating mode.

In the cooperating mode Structure Builder is the tool for:

- Creation of Advant Objects
- Structuring of Advant Objects in hierarchies according to the structures of the plant
- Navigating between Advant Objects
- Opening of views.

Independent Mode

In some cases it may be needed to work in a more isolated environment, without using data from the other Builders. For example, when an engineer is working with On-line Builder on a stand-alone PC at site during the installation and commissioning phase without Advant Engineering Workplace. In the **independent** mode:

- Application Builder is used instead of Structure Builder for Advant controller configuration.
- Third party products such as Microsoft Word or AutoCAD are used directly instead via Document Builder or Electrical Diagram Builder.

It is not possible to create Advant Objects in the independent mode, but data can be attached to Advant Objects later in cooperating mode.

PC Network Configurations

Advant Engineering Products can be combined according to specific needs. Several configurations are possible:

- Stand-alone PC (Figure 2-5)
  - Data and programs are stored on the local hard disk. A typical example is an Advant Station 100 Series Engineering Station used in a commissioning situation. The tools can run either in the **independent** mode or in the **cooperating** mode.
- Networked PCs (Figure 2-6)
  - Data can be stored on a data server for multi-user access. An example for this configuration is in-house engineering. The tools can run either in the **independent** mode or in the **cooperating** mode. This is the typical configuration for working in cooperating mode.

The following configurations are supported by the Advant Engineering Products:

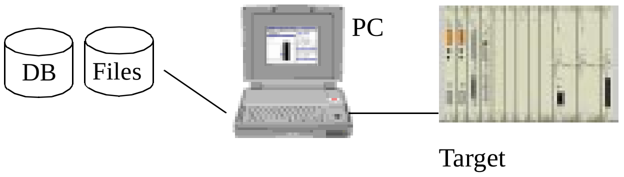


Figure 2-5. Stand-alone PC

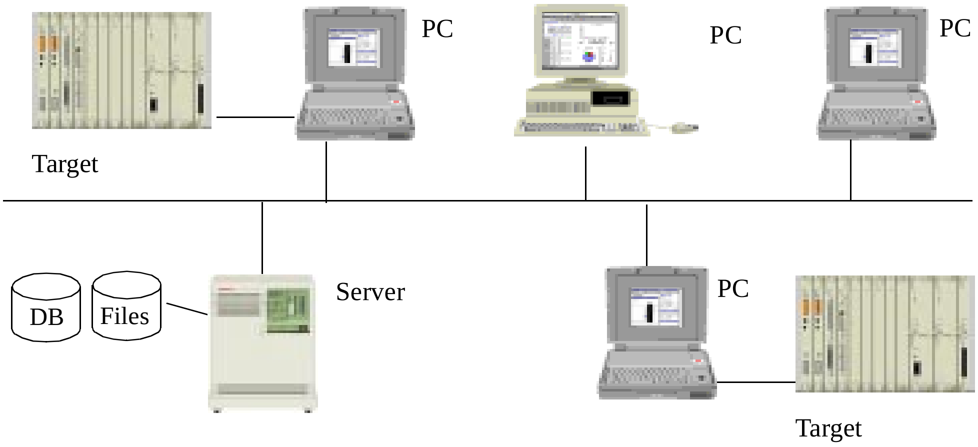


Figure 2-6. Networked PCs

Scalability

AdvaBuild Engineering Software offers the flexibility and scalability for the creation of an engineering environment according to the users needs. As different configurations may coexist, it is easy to adapt the number of users to the project size. To reach this the workplace concept is supported. A PC is considered as a workplace where all the tools needed to get the work done can be installed. So even if there are a lot of workplaces available in a project each one may specifically be equipped for the tasks to be done. The product that provides this functionality is Advant Engineering Workplace.

Project Data Administration

The Advant Engineering Workplace provide functions for project data administration. It allows to register different users and allocate access rights and passwords.

Backup and restore of project data is supported.

Chapter 3 Software Components

AdvaBuild Engineering Software is designed for use under Windows NT and is structured into three major product groups:

- Advant Engineering Workplace

  For establishing the engineering environment, navigation and administration functions.

- AMPL Control Configuration

  For configuration and commissioning functions for Advant controllers.

- Computer Aided Electrical Engineering

  For handling of electrical diagrams.

Each product group consists of a basic unit and some options. Basic units and options are the products, that can be ordered. Tools which perform a dedicated engineering task are called Builders. A product may contain several Builders like Application Builder and Function Chart Builder and additions like a text editor or an example project.

Some products may require other products as prerequisite. When the Builders included in AMPL Control Configuration should work in cooperating mode, they require Advant Engineering Workplace. This is not necessary, if they will be used in independent mode without using Advant Objects.

To achieve the maximum flexibility and scalability each product (basic unit or option) can be ordered and updated independently and can be arranged together with other products into an appropriate working environment. Further, licenses are available in steps and can be adjusted to the actual number of team members working with a certain function.

Some products may require third party products as prerequisites. They put functionality on top of the third party products. The third party products, for example, Microsoft Access, have to be ordered separately from other suppliers. All third party products have been validated in the US English international version.

3.1 Advant Engineering Workplace

The Advant Engineering Workplace is necessary to work in the cooperating mode. The components included are described in the following sections.

3.1.1 Structure Builder

General

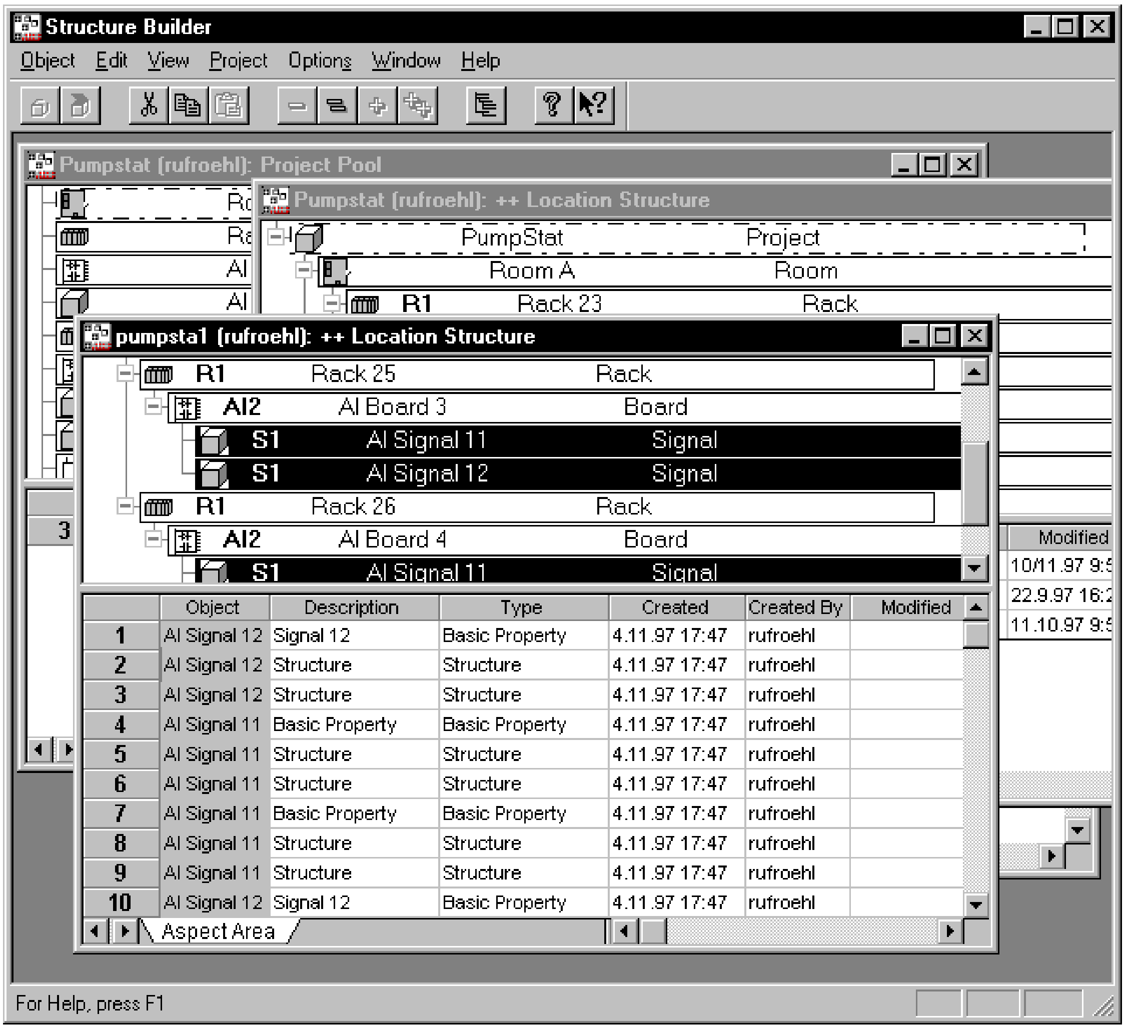
Structure Builder is the tool to handle the Advant Objects and to visualize the structure of a plant. The plant is represented as a set of structures, containing Advant Objects in hierachical relations. Structure Builder enables the user to navigate between Advant Objects in a convenient way and to perform activities on a selected Advant Object, such as opening certain views, copying or moving Advant Objects, structures or even a whole project.

Functions

Structure Builder offers the following functions:

- Create, move, and delete Advant Objects
- Organize Advant Objects in hierarchies according to the needs of the plant and process structure
- Navigate between Advant Objects
- Assign reference designations to Advant Objects
- Cut/copy/paste Advant Objects
- Open views of aspects
- Import engineering data in cooperation with Parameter Builder
- Create and delete projects
- Back-up and restore project data
- Export / import sets of Advant Objects (from a single object to all objects of a project).

In Structure Builder several structure windows can be open simultaneously. The user can open for example the location structure of the same project more than once. Data consistency is achieved independent of the window the user is working with. Further on the user can operate in the functional structure of the same project and in the location structure of another project. Figure 3-1 shows an example of multiple windows in Structure Builder.



	Object	Description	Type	Created	Created By	Modified
1	AI Signal 12	Signal 12	Basic Property	4.11.97 17:47	rufroehl	
2	AI Signal 12	Structure	Structure	4.11.97 17:47	rufroehl	
3	AI Signal 12	Structure	Structure	4.11.97 17:47	rufroehl	
4	AI Signal 11	Basic Property	Basic Property	4.11.97 17:47	rufroehl	
5	AI Signal 11	Structure	Structure	4.11.97 17:47	rufroehl	
6	AI Signal 11	Structure	Structure	4.11.97 17:47	rufroehl	
7	AI Signal 11	Basic Property	Basic Property	4.11.97 17:47	rufroehl	
8	AI Signal 11	Structure	Structure	4.11.97 17:47	rufroehl	
9	AI Signal 11	Structure	Structure	4.11.97 17:47	rufroehl	
10	AI Signal 12	Signal 12	Basic Property	4.11.97 17:47	rufroehl	

Figure 3-1. Multiple windows in Structure Builder

Import Engineering Data

By using Structure Builder it is possible to import existing engineering data into the current project. The imported data is in standard character separated format (CSV). CSV can be generated by Microsoft Excel and Microsoft Access.

If these import mechanisms are combined with a well-tested library project including standard engineering solutions, the engineering efficiency and quality can be significantly improved. Figure 3-2 shows the automatic creation of Advant Objects during the import. Whole structures and/or individual Advant Objects referenced from the library can be imported into the current project. During this creation placeholder parameter values defined in the library objects are substituted by the actual values taken from imported engineering data. This mechanism provides bulk data oriented import and update of Advant Objects.

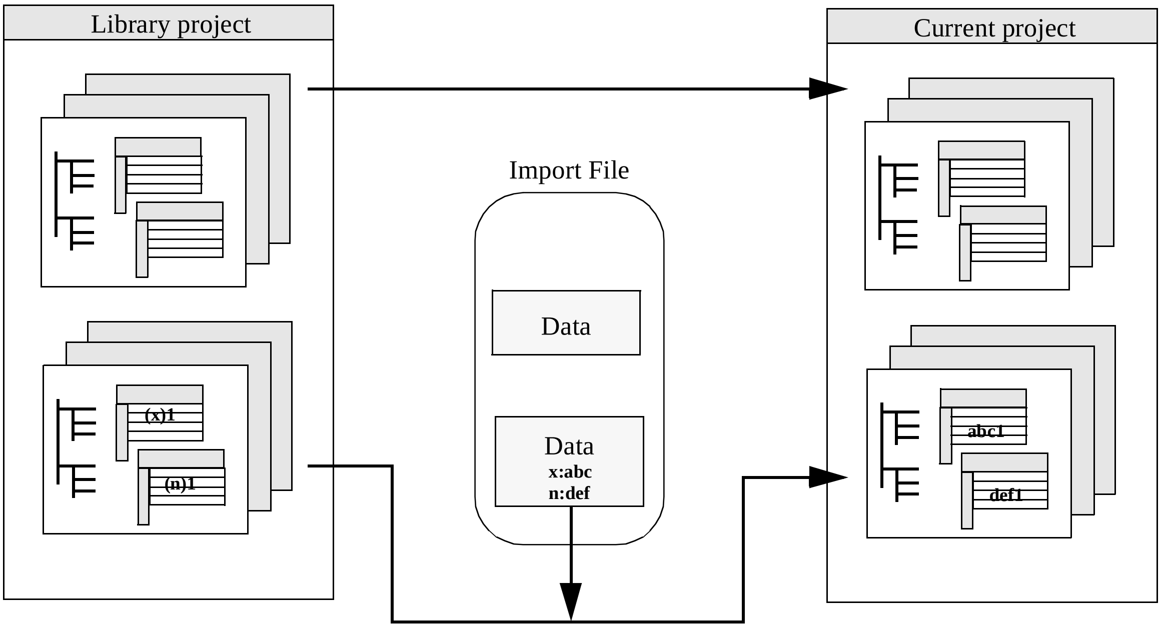


Figure 3-2. Automatic creation of Advant Objects during import

3.1.2 Advant Engineering Server

The Advant Engineering Server prepares the environment for the engineering data storage.

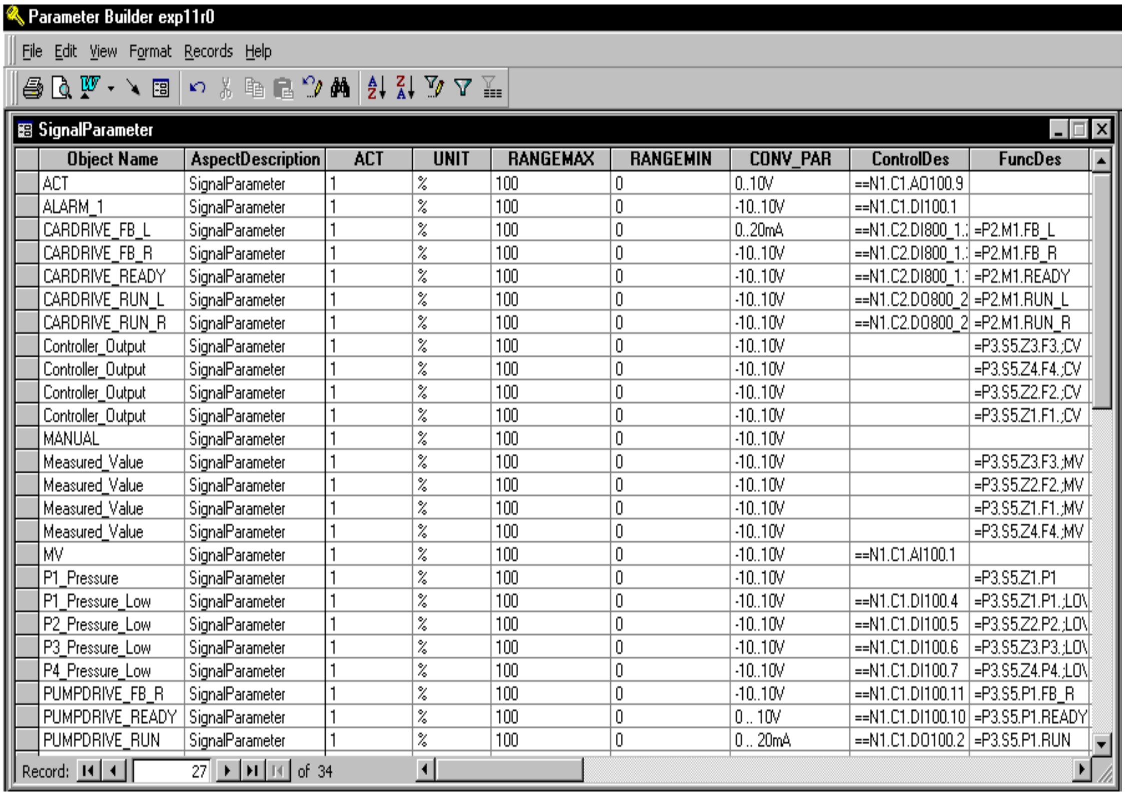
3.2 Option Parameter Builder

General

Parameter Builder is the tool for efficient bulk data handling. It allows to enter and modify engineering data which are used as parameters for other aspects. For example, Type Circuit instances in a Circuit aspect can refer to parameter aspects and can be updated by the actual values of the parameter aspects on user’s request. Parameter Builder is based on Microsoft Access.

Functions

For an existing Advant Object various parameter aspects like an aspect for signal parameters can be created. The data of a parameter aspect are displayed as a Microsoft Access form (see Figure 3-3).



Object Name	AspectDescription	ACT	UNIT	RANGEMAX	RANGEMIN	CONV_PAR	ControlDes	FuncDes
ACT	SignalParameter	1	%	100	0	0..10V	==N1.C1.AO100.9	
ALARM_1	SignalParameter	1	%	100	0	-10..10V	==N1.C1.DI100.1	
CARDRIVE_FB_L	SignalParameter	1	%	100	0	0..20mA	==N1.C2.DI800_1.	=P2.M1.FB_L
CARDRIVE_FB_R	SignalParameter	1	%	100	0	-10..10V	==N1.C2.DI800_1.	=P2.M1.FB_R
CARDRIVE_READY	SignalParameter	1	%	100	0	-10..10V	==N1.C2.DI800_1.	=P2.M1.READY
CARDRIVE_RUN_L	SignalParameter	1	%	100	0	-10..10V	==N1.C2.DO800_2	=P2.M1.RUN_L
CARDRIVE_RUN_R	SignalParameter	1	%	100	0	-10..10V	==N1.C2.DO800_2	=P2.M1.RUN_R
Controller_Output	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z3.F3.;CV
Controller_Output	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z4.F4.;CV
Controller_Output	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z2.F2.;CV
Controller_Output	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z1.F1.;CV
MANUAL	SignalParameter	1	%	100	0	-10..10V		
Measured_Value	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z3.F3.;MV
Measured_Value	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z2.F2.;MV
Measured_Value	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z1.F1.;MV
Measured_Value	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z4.F4.;MV
MV	SignalParameter	1	%	100	0	-10..10V	==N1.C1.AI100.1	
P1_Pressure	SignalParameter	1	%	100	0	-10..10V		=P3.S5.Z1.P1
P1_Pressure_Low	SignalParameter	1	%	100	0	-10..10V	==N1.C1.DI100.4	=P3.S5.Z1.P1.;LO
P2_Pressure_Low	SignalParameter	1	%	100	0	-10..10V	==N1.C1.DI100.5	=P3.S5.Z2.P2.;LO
P3_Pressure_Low	SignalParameter	1	%	100	0	-10..10V	==N1.C1.DI100.6	=P3.S5.Z3.P3.;LO
P4_Pressure_Low	SignalParameter	1	%	100	0	-10..10V	==N1.C1.DI100.7	=P3.S5.Z4.P4.;LO
PUMPDRIVE_FB_R	SignalParameter	1	%	100	0	-10..10V	==N1.C1.DI100.11	=P3.S5.P1.FB_R
PUMPDRIVE_READY	SignalParameter	1	%	100	0	0 .. 10V	==N1.C1.DI100.10	=P3.S5.P1.READY
PUMPDRIVE_RUN	SignalParameter	1	%	100	0	0 .. 20mA	==N1.C1.DO100.2	=P3.S5.P1.RUN

Figure 3-3. List view of Parameter Builder

Each parameter has an address which may be referenced by other Builders. Figure 3-4 shows an example how parameters may be referenced from Type Circuits. The two Type Circuits used in the Circuit “Motor Group” have references to parameter aspects.

On demand parameter values are updated from an engineering data file, for example a Microsoft Excel spread sheet. This procedure can be performed several times.

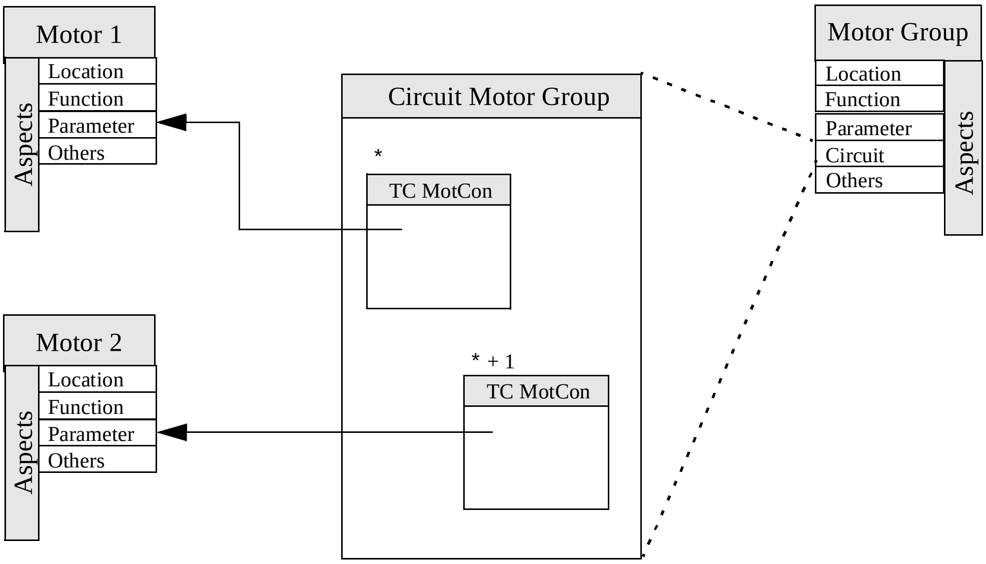


Figure 3-4. Referencing parameters of Type Circuits

Parameter references can be made to parameter aspects in the same or in other Advant Objects. For example, common project parameters can be stored in the parameter aspect of the Advant Object representing a whole project.

In cooperation with Structure Builder the Parameter Builder provides the following functions:

- Create and delete parameter aspects manually or by importing data from a file
- Copy parameter aspects
- Navigation in parameter aspects
- Manipulate individual values or replace several values by one command
- Filter out certain parameter aspects fulfilling user definable filter criteria
- Print parameter data by user definable reports
- Create and delete of user defined parameter aspect types.

3.3 Option Document Builder

General

Document Builder is the tool to efficiently create, administer and integrate documents like functional descriptions, specifications, and memos. Various editing tools like Microsoft Word or Microsoft Excel can be used, depending on the dedicated purpose or existing installation. These tools mentioned are not part of Document Builder, but are assumed to be installed, and are supported by Document Builder.

Functions

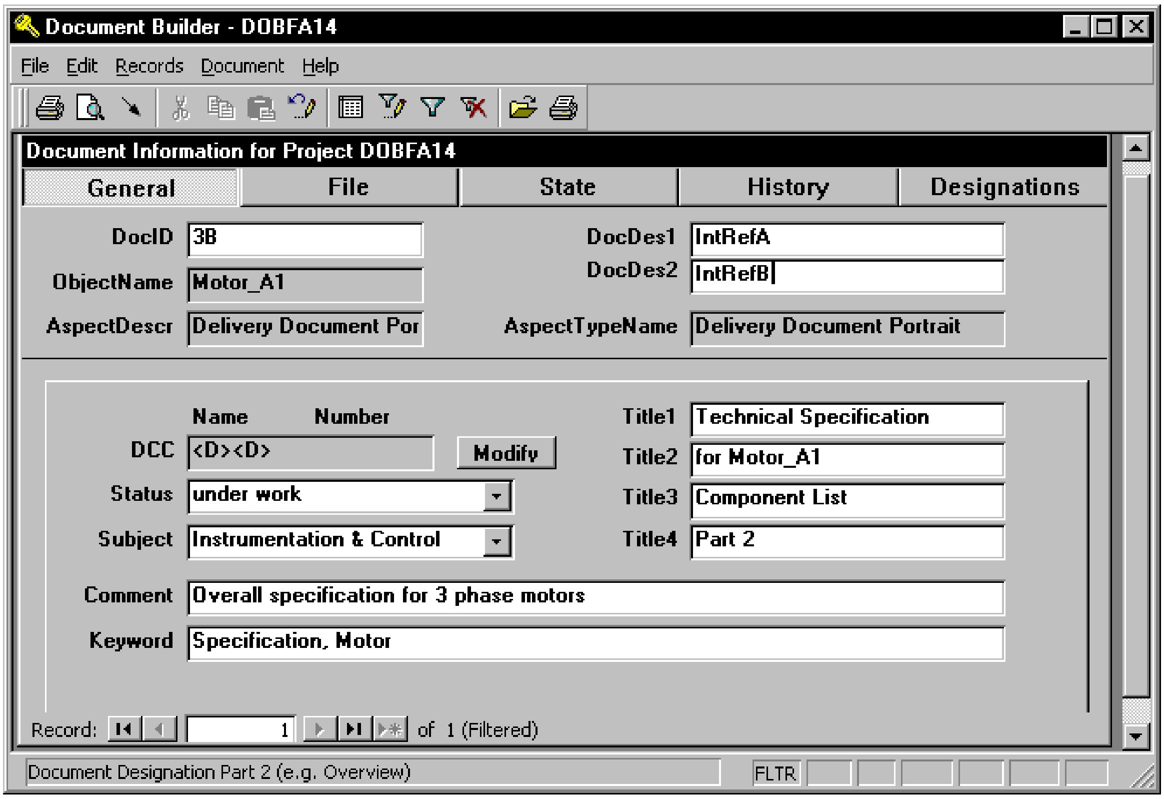
A document, for example a functional description, is an aspect of an Advant Object. The user can select an Advant Object in Structure Builder, create a document aspect by selecting an appropriate template, and then open a view on that document. Then the related tool will be started.

One of the possible views is the summary view, which opens a Microsoft Access form, where the user can enter administrative data for a document like author and department name, titles, document number, and revision index. Figure 3-5 shows an example of the summary view.

When switching to the document view, some of these document administration data will be automatically transferred into the document. For example the author’s name will appear in the corresponding field of the document’s footer. This works for Microsoft Word and Microsoft Excel. Figure 3-6 shows a footer of a Word document containing fields referencing document administrative data as shown in Figure 3-5.

For Microsoft Word and Microsoft Excel documents it is also possible to refer to data stored in the Parameter Builder or Structure Builder by use of parameter references.

All features of the selected document editing tool are available. User defined templates can easily be created.

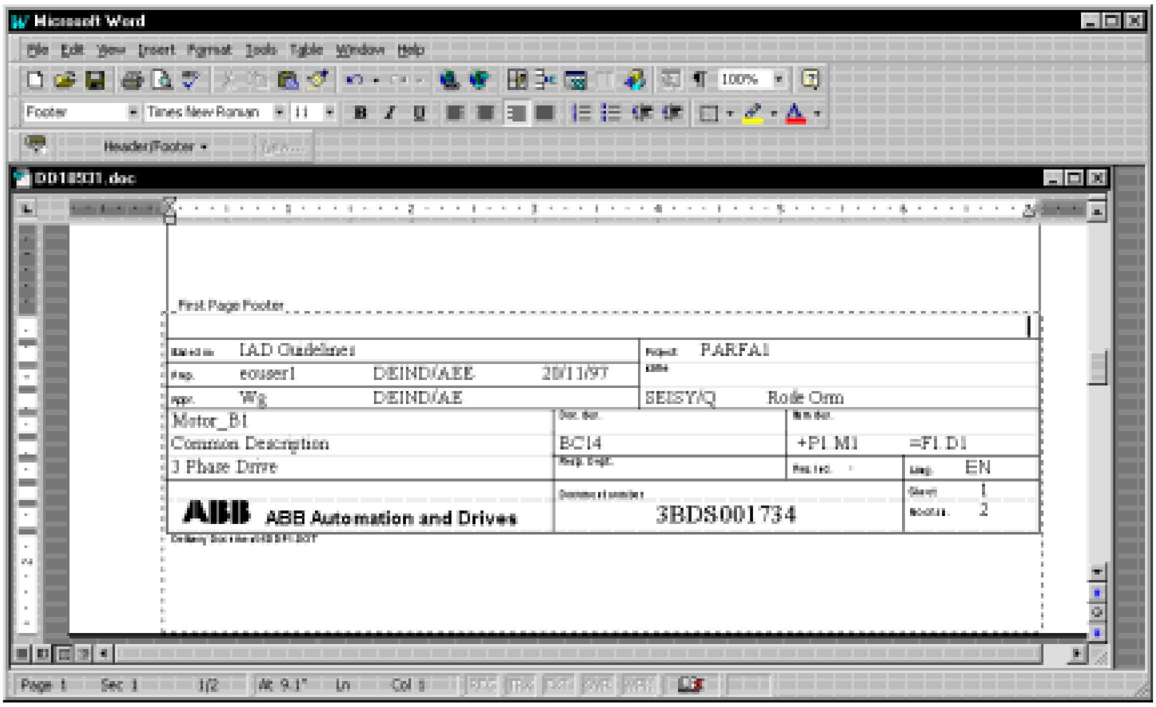

Document Builder - DOBFA14
File Edit Records Document Help
Document Information for Project DOBFA14
General
File
State
History
Designations
Name
Number
Modify

DocID	3B
ObjectName	Motor_A1
AspectDescr	Delivery Document Por
DocDes1	IntRefA
DocDes2	IntRefB
AspectTypeName	Delivery Document Portrait
DCC	<D><D>
Status	under work
Subject	Instrumentation & Control
Title1	Technical Specification
Title2	for Motor_A1
Title3	Component List
Title4	Part 2
Comment	Overall specification for 3 phase motors
Keyword	Specification, Motor

Record: 1 of 1 (Filtered)

Document Designation Part 2 (e.g. Overview) FLTR

Figure 3-5. Example of a Document Builder form


Microsoft Word
File Edit View Insert Format Tools Table Window Help
Footer
Times New Roman
11
100%
Header/Footer
DD18531.doc
First Page Footer
ABB Automation and Drives
Page 1 Sec 1 1/2 At 9.1" Ln Col 1

IAD Guidelines
eouser1 DEIND/AEE 20/11/97
Wg DEIND/AE
PARFAI
SEISY/Q Rode Orm
Motor_B1
Common Description
3 Phase Drive
BC14
+P1.M1 =F1.D1
EN
3BDS001734
1
2

Figure 3-6. Document footer

In cooperation with Structure Builder the Document Builder provides the following functions:

- Create and delete document aspects manually or by importing data from a file
- Copy document aspects
- Navigation in document aspects
- Manipulate individual values or replace several values of document administration data
- Import values of document administration data
- Filter out certain document aspects fulfilling user definable filter criteria
- Print document administration data
- Create and delete user defined document templates

3.4 AMPL Control Configuration

AMPL Control Configuration and its options provide the functionality to configure the Advant (Master) controllers. AMPL Control Configuration includes the following components:

- Application Builder
- Function Chart Builder
- Bus Configuration Builder

The following option is available:

- Option On-line Builder

Target System Types Supported

The following tables give an overview of the target systems which are supported by the AMPL Control Configuration products. For details see Appendix A, Targets Supported by AMPL Control Configuration. For access to remote target systems see Appendix B, AMPL Control Configuration Access Path to Targets.

Table 3-1. Overview of support of Builders for different Advant target systems

	Target system				
Builder	**AC 400 Series**	**Advant Operator Workplace**	**AC 110**	**AC 70**	**AC 55**
On-line Builder	yes	yes	-	-	-
Function Chart Builder					
- Off-line	yes		yes	yes	yes
- On-line	-		yes	yes	yes
Bus Configuration Builder	-		yes	yes	-

Table 3-2. Overview of support of Builders for different Master target systems

	Target system		
Builder	**MG 230/1**	**MP 200/1**	**MP 51**
On-line Builder	yes	yes	yes
Function Chart Builder			
- Off-line	-	yes	-
- On-line	-	-	-
Bus Configuration Builder	-	-	-

3.4.1 Application Builder

General

Application Builder is the navigation tool for working in the independent mode. It handles the Advant controller configuration data. For detailed information about the independent mode, see Section 2.6, Architectural Overview.

Creation of Advant Objects is not possible in this mode. Nevertheless, aspect type data for Advant OCS configuration, such as Advant OCS projects, nodes, Circuits, and Type Circuits are handled by Application Builder.

From within Application Builder the tools Function Chart Builder, On-line Builder, Bus Configuration Builder, and a text editor – for example AS100-EDIT – can be started.

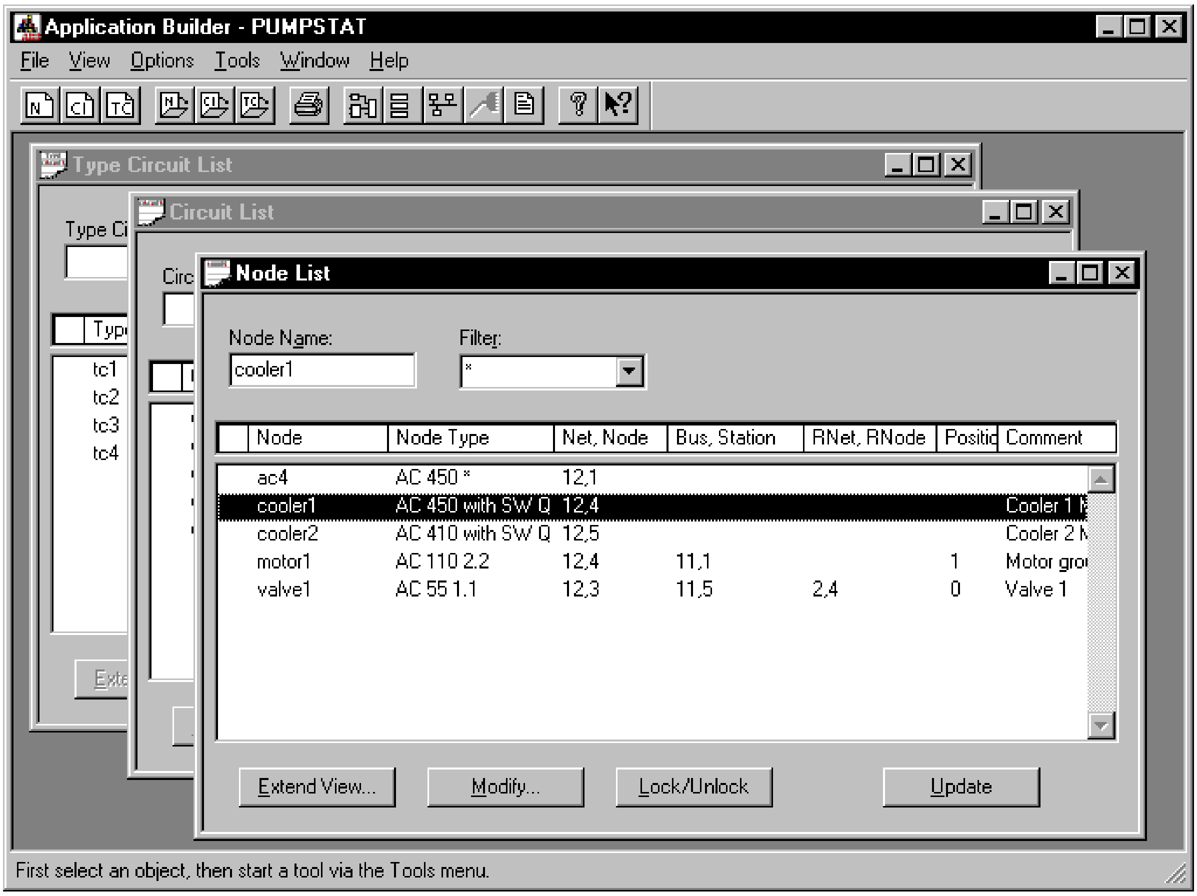
Application Builder can store default values to be used throughout a whole Advant OCS project.

Application Builder assures that you always work on the application data with the correct Builder version. It supports exchange of configuration data between different nodes and across different projects.

Functions

Application Builder offers the following functions:

- Administration of projects, nodes, Circuits, and Type Circuits, for example, select, open, create, delete, and copy
- Project data can be stored on the local hard disk or on a central server. This takes into account the demands of service engineers as well as project engineers working as a team together on the same project
- Modification of administration data
- For documentation purposes the node, Circuit, or Type Circuit lists can be printed
- Starting of Builders on nodes, Circuits, and Type Circuits
- Administration of project and node specific libraries for Function Chart Builder



Node Name: cooler1

Filter: *

	Node	Node Type	Net, Node	Bus, Station	RNet, RNode	Positic	Comment
	ac4	AC 450 *	12,1				
	cooler1	AC 450 with SW Q	12,4				Cooler 1 M
	cooler2	AC 410 with SW Q	12,5				Cooler 2 M
	motor1	AC 110 2.2	12,4	11,1		1	Motor grou
	valve1	AC 55 1.1	12,3	11,5	2,4	0	Valve 1

First select an object, then start a tool via the Tools menu.

Figure 3-7. Application Builder with node list, Circuit list, and Type Circuit list

In cooperating mode Application Builder is not directly visible to the user but provides the needed functions to handle AMPL Control Configuration related aspects to the Structure Builder.

3.4.2 Function Chart Builder

General

Function Chart Builder provides an easy-to-use environment for application programming of Advant controllers. It supports Advant Controller 400 Series and Advant Controller 100 Series. It offers efficient methods of object oriented project engineering by supporting Type Circuits and Circuits. In the cooperating mode these entities are mapped to control aspects of Advant Objects, for example, the Type Circuit and the Circuit aspect. This ensures a high software quality and low maintenance efforts. It can be used in both cooperating and independent mode.

User Interface

With Function Chart Builder it is possible to have several windows open at the same time. For example, the user can create a DB element while working in the function chart representation. In addition, the tree representation can be open to keep control over the whole control logic. Multiple PC section windows can be opened, which is especially useful when working with large AMPL programs. Scrolling within each section window to inspect and connect different parts of that AMPL program at the same time is possible (see Figure 3-8). To adjust the view to the interesting part of the control logic, zooming is supported.

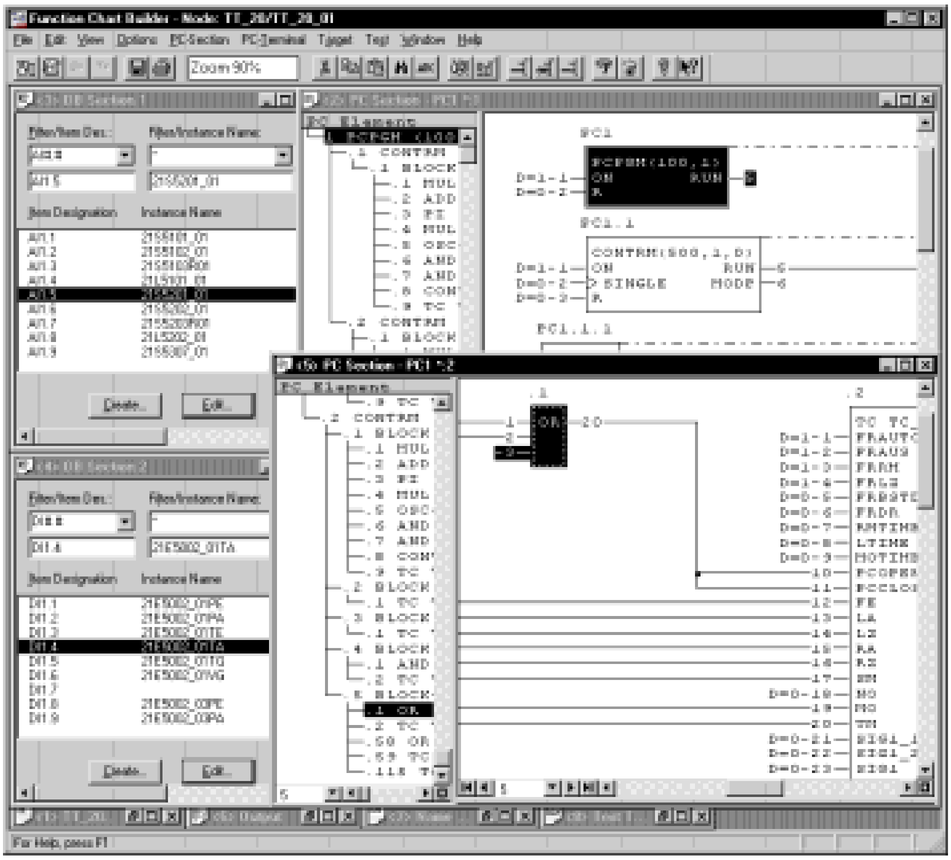


Figure 3-8. Function Chart Builder with different section and split windows

Functions

Function Chart Builder offers the following functions:

- Off-line editing (that is, without the need of being connected to a controller) for:
  - Application programs in function chart and tree representation, following WYSIWYG principle
  - Database elements in list form including comfortable filter possibilities
  - Symbols and terminals to define formal parameters of Type Circuits and Circuits.
- Import and export of AMPL source code for application programs, DB elements, Type Circuits, Circuits and Node structures.
- Powerful PC element connection possibilities, using the mouse as well as the keyboard
- Support of connections to not yet defined signals
- Change of execution order
- Calculation of computing time and memory consumption
- Many kinds of navigation functions
- Checker for PC source code with and without DB element connections
- Various kinds of documentation of application programs with support of user and predefined footers
- Export of DB elements as tab separated text to file or to clipboard
- Support of function oriented project engineering including
  - User-defined standard engineering solutions (Type Circuits)
  - Function oriented, controller environment independent solutions (Circuits).
- Configuration support for AdvaSoft for Windows based on Windows 3.11 and for AF100 OPC Server based on Windows NT
- Support for DB and PC Element Libraries and on-line reference manuals for Advant controllers
- Powerful cut, copy and paste function when editing the PC section off-line:
  - Within and between nodes, node structures, Type Circuits and Circuits of the same project or even between different projects
  - Between different versions of Function Chart Builder supporting cut, copy and paste.

  On paste, replacement of strings is supported for:
  - connections by name
  - connections to DB elements and to Type Circuit/Circuit terminals
  - Type Circuit/Circuit symbol values.
- Password protected access to engineering data.

Additional functions for Advant Controller 100 Series:

- Generation of target code
- Access to Advant Controller 100 Series
  - Direct access via serial line
  - Direct access via Advant Fieldbus 100
    To Advant Controller 100 Series other than Advant Controller 55 by use of Advant Fieldbus 100 Interface
  - Remote access
    Remote access to Advant Controller 100 Series other than Advant Controller 55 via:
    Another directly connected Advant Controller 100 Series other than Advant Controller 55 on the same Advant Fieldbus 100
    or
    Advant Controller 400 Series and Advant Fieldbus 100 or RCOM (requires Option On-line Builder).
  - Every PC running Function Chart Builder can be used as communication server for a Function Chart Builder running on a networked PC connected via TCP/IP. In that case only the server PC has to be connected, directly or remotely (see above), to an Advant Controller 100 Series.
- Target system control including
  - Download of application program
  - Save and clear application in PROM (flash-type)
  - Start and stop application program
  - Report status and errors
  - Module diagnosis
  - Report options available on the controller
  - Read/set date and time.
  - Restart target (if supported by target system).
  - Password protected access to target system (if supported by target system).
- On-line editing (that is, while connected to a controller) for:
  - Application program in function chart representation
  - Database elements.
- On-line preparation mode for preparation of on-line changes while not being connected to the target.
- Testing and fault tracing
  - Dynamic display of variables and signals in function chart representation, in table form and graphically as trend record.
  - Forcing of variables and signals in function chart representation and in table form.

  - Import and export of user configured test tables.
- The concept of Extended DB elements supports (if supported by target system)
  - Definition of a signal mostly independent of the I/O hardware.
  - Definition of a signal for access via Advant Fieldbus 100 OPC Server. Every aspect of the signal, from DSP generation up to event generation as well as display texts and classes can be seen at one single DB element.
  - Distribution of signals in a network, with only one point in the target system where the signal is defined, including the conversion of raw values to engineering units.

Function Chart Builder can be used in independent and in cooperating mode.

AMPL PC and DB Element Libraries

For the different Advant Controllers AMPL PC and DB Element Libraries are available. These libraries include the descriptions for the AMPL PC and DB elements available for the specific controller type. Together with the libraries the corresponding reference manuals for elements are included. The reference manuals describe the detailed functionality of the elements included in the library. After installation of the libraries, the reference manuals can be accessed via Function Chart Builder and On-line Builder Help functions.

AMPL PC and DB Element Libraries for the following controllers are included:

- Advant Controller 450
- Advant Controller 410
- Advant Controller 110
- Advant Controller 70
- Advant Controller 55
- AdvaSoft for Windows (based on Windows 3.11)

To work with Function Chart Builder at least one controller library must be installed. Generation of configuration data for Advant Fieldbus 100 OPC Server is possible from all libraries containing DB elements for Advant Fieldbus 100 configuration (Advant Controller 450, Advant Controller 410, Advant Controller 110 and Advant Controller 70).

Additional AMPL PC and DB Element Libraries are supplied by ABB organizations, which deliver specific applications or hardware extensions.

In case of using PROFIBUS-DP together with AC 110*2.2 or AC 110*2.3, in addition own DB element types can be created, which fit exactly the PROFIBUS-DP devices. The DB element types are created as far as possible automatically by using the contents of the GSD file, which is available for every Profibus device. The necessary software is delivered together with Function Chart Builder.

3.4.3 Bus Configuration Builder

Function Chart Builder supports the possibility to store bus configuration data of Advant Fieldbus 100 objects for

- Consistency checks, bus load calculation and generation of cross references
- Use within AF100 OPC Server

in a bus configuration database.

Bus Configuration Builder offers the following functions

- Creation and deletion of the complete bus configuration database
- Creation and deletion of bus objects in the database
- Creation and deletion of station objects representing AF100 OPC stations in the database
- Calculation of the bus load
- Consistency checks for Data Set communication
- Generation of cross references
- Generation of bus configuration database text dump

In addition the automatic generation of configuration data for AdvaSoft for Windows is supported. In that case Bus Configuration Builder collects communication configuration data of Advant Controller 110 and Advant Controller 70 connected to Advant Fieldbus 100. The communication data collected are checked for consistency of addresses and prepared for use in AdvaSoft for Windows.

Bus Configuration Builder can be used in independent and in cooperating mode

3.5 Option On-line Builder

On-line Builder is the tool for configurating, commissioning and testing applications for Advant Controller 400 Series, MasterPiece 200/1, MasterPiece 51, MasterGate 230/1 and Advant Operator Workplace.

Basic Functions

- Selection of target system
- Command file handling
- Symbol handling
- Performance analysis
- Backup and restore of application data
- Post-Mortem Analysis
- AMPL source code editing and handling
- Trend Recording
- direct connection to Advant Controller 400 Series and direct connection to Master Bus 300 with possibilities of remote communication to other controllers is supported
- On-line Builder is split into a client and server part. Only the server part needs to be connected to an Advant Controller 400 via Advant Station 100 Series Engineering Board.

Any On-line Builder - one at a time - running on a networked PC connected via TCP/IP with the On-line Builder server can use this server to access Advant Controller 400 Series.

On-Line Builder can be used in independent and in cooperating mode

Advant Controller 400 Series Configuration and Programming

The following functions are included:

- Dimensioning of database and AMPL program areas
- Database population
- Application program entry, editing, and on-line modification of AMPL programs during program execution
- Application program and process database documentation, in graphic or list form
- Source code loading and dumping of application programs and database contents
- Testing and fault tracing
- Dynamic display and trend recording of variables; display and modification of parameters
- Forcing of inputs and outputs
- Reading/setting of date and time.

Advant Operator Workplace Configuration

The following functions are included:

- Database handling, including configuration
- Fault tracing.

MasterGate 230/1 Configuration

The following function is included:

- Database handling.

Network Management Services

The following function is included:

- Testing, maintenance and fault tracing in MasterBus 300 networks.

3.6 Computer Aided Electrical Engineering

The products of Computer Aided Electrical Engineering (CAEE) efficiently supports the tasks of electrical engineering.

The user can decide on a project by project basis to work either in cooperating or independent mode, see Section 1.3, Advant Engineering Workplace, the project data of the independent mode can be reused in cooperating mode, if the Advant Objects with their Electrical Aspects are created later on.

Computer Aided Electrical Engineering includes the following products:

3.6.1 Electrical Diagram Builder - Wiring Builder

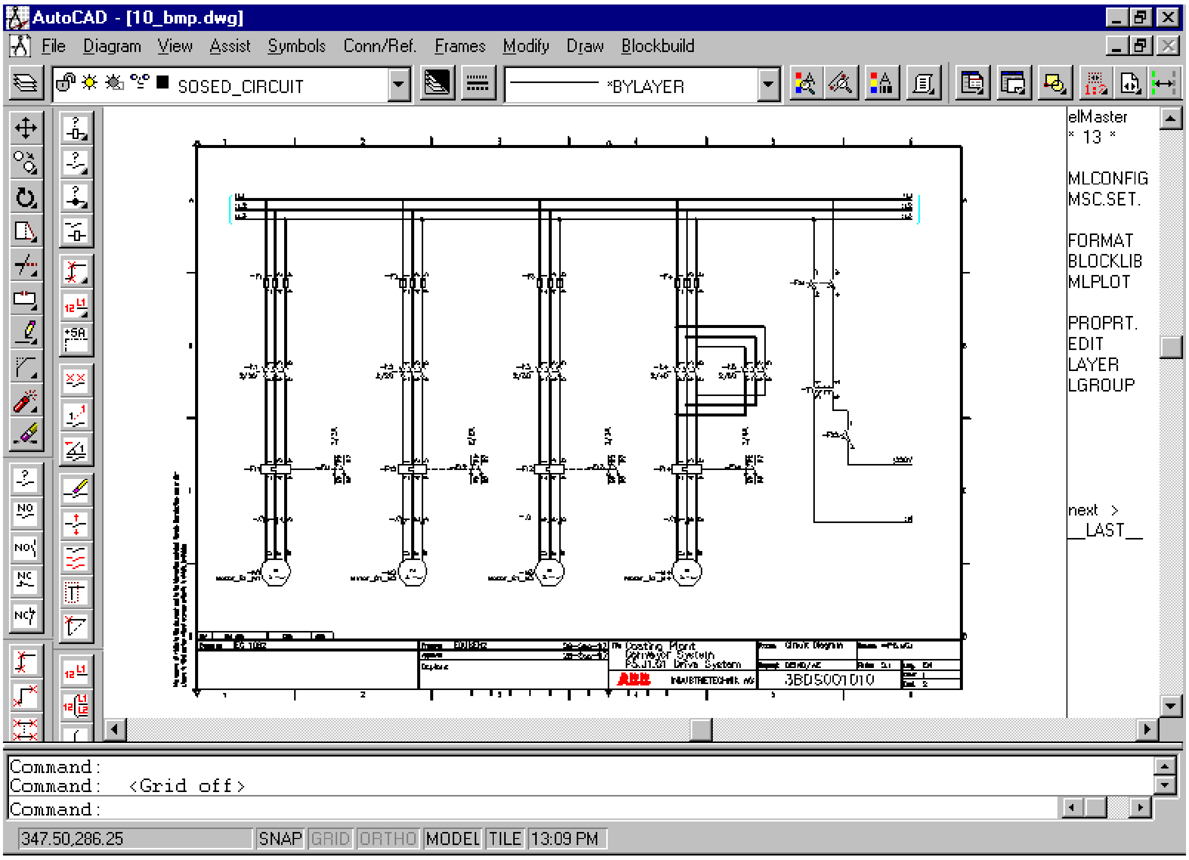
Electrical Diagram Builder - Wiring Builder supports the electrical plant engineering process.

The main functions of the Electrical Diagram Builder are

- editing of different electrical diagrams with a bi-directional database connection, making the diagrams live engineering documents,
- handling of documents such as electrical diagrams and reports,
- handling of product data for electrical equipment.

Diagram editing is supported using the power and performance of AutoCAD ® Release 14, enhanced by additional, comfortable drawing functions for electrical diagrams, such as circuit diagrams, connection diagrams, layout diagrams, and overview diagrams. Different symbol libraries are available for different types of diagrams.

The title block and symbols in a diagram can be updated from attribute values in the database and vice versa.



```
Command:
Command:  <Grid off>
Command:
```

Figure 3-9. Electrical Diagram Builder - Diagram View

Electrical Diagram Builder supports the handling of product data for electrical equipment like motors, relays, cables or terminal bars but also mounting equipment like enclosures or racks in the engineering database. It is possible to change these data and to create reports, for example, parts lists.

Electrical Diagram Builder is working in cooperating mode together with Structure Builder, thus offering an intuitive and easy to use functionality for

- creation, duplication, or deletion of electrical diagrams and electrical product data
- importing and opening electrical diagrams
- import of product data
- including data from Structure Builder, like reference designations or Advant Object names into electrical diagrams

User Interface

The user interface to edit drawings is based on the well-known functionality of AutoCAD® Release 14 extended by additional functions for electrical CAD-applications.

The user interface to the database is implemented based on Microsoft Windows. The different dialogs of the user interface are closely integrated. The following dialog functions allow efficient bulk data handling:

- Navigation and selection

  A number of aspects diagrams or electrical devices can be selected and attributes can be edited using data sheet or form view.

- Bulk editing

  Editing of bulk data is supported by data sheets, and powerful filtering, sorting and replacing functions.

- Multiple execution

  Multiple execution of specific commands on the list of selected aspects, for example print a list of selected diagram aspects allows efficient bulk data handling. The user is able to define own commands (macros).

- Copy special

  Allows you to copy several selected document aspects to a number of selected Advant Objects.

- Openness

  The user can integrate own functions and macros for automation of recurrent tasks.

Functions

Electrical Diagrams

Electrical Diagram Builder supports handling of **electrical diagrams**. A diagram comprises of:

- the drawing file itself
- diagram related reference designations
- title block attributes.

You can attach existing drawing files to an Advant Object and detach the associated drawing file, thus enabling re-use of former drawings.

Through revision and approval handling for diagrams it is easy to keep track of its data and its changes.

Electrical Product Data

Electrical Diagram Builder provides mechanisms to create, delete and duplicate electrical product data to an Advant Object, create references to articles in the article library and edit terminals.

Electrical product data comprises:

- device data (for Advant Objects of type motors, sensors, etc.)
- cable data
- function data (for Advant Objects of type signal and channel)
- terminals

Within Electrical Diagram Builder article codes can be used in diagrams and database to code a certain, system and supplier independent requirement profile for electrical equipment. By using article codes also in the article library, typical articles can be referenced, deferring the decision on the concrete article. Using the article codes therefore support the reuse and allows for step wise refinement of the references to articles.

Electrical Reports

Electrical Diagram Builder provides mechanisms to create, delete, duplicate and print reports. Reports can be configured based on report type definitions and report parameters.

Standard reports like for example

- parts lists
- connection table (different views, including terminal bar oriented view)
- I/O Signal List

according to ABB corporate standards and ABB Forms and Documents Standard are available.

As default or for quick preview reports produced with Crystal reports can be used, enhanced report functionality is achieved by the use of editable reports in Microsoft Word facilitating further reuse of the reports' data.

Through revision handling, approval and difference lists for reports it is easy to keep track of the data and its changes.

Drawing Functions on Diagrams

The drawing functions of the Electrical Diagram Builder are provided on top of AutoCAD® Release 14 functions. The following functions are supported

- Format functions to manage drawing formats (drawing frame, title block and revision block)
- Block library functions to create, delete and administer symbols in libraries.
- Layer and layer group functions to change the status for layers and layer groups
- Batch functions to make changes that are common to a number of drawings
- Plotting functions to steer the plotting to the correct printer with the correct settings
- Text functions for creating, editing, altering the appearance of text.
- Break, stretch, move and close single-/multiple connection lines
- Cross-reference handling for main-/sub-symbols
- Signal reference handling

- Insert terminals, renumber terminals
- Draw boundary frames for nesting of designations
- Configuration functions to setup the drawing environment
- Insert cable/wire markers
- Dimensioning functions for layout diagrams

Handling of Reference/Item Designations

Reference-/item designations can be updated from database to associated symbol representations. The different types of reference designations are:

- Function reference designation (=)
- Product reference designation (-)
- Location reference designation (+)
- OCS item designation (#)
- Free object name (e.g. I/O signal name, instrument id, free cable number)

Symbol and Title Block Update

The Electrical Diagram Builder provides mechanisms to update symbols in the drawing with data. This includes the functionality:

- Link symbols to objects in the database
  - by use of reference designations (function or product oriented)
  - by use of free object names.
- Update reference designations between database and diagram according to the following standards:
  - IEC 750:1983 (international)
  - IEC 61346 (international)
  - DIN 40719 (german)
- Update descriptive attributes between database and diagram (e.g. names, descriptions)
- Update terminal designations between database and diagram
- Update Advant OCS signal names and item designation for I/O symbols
- Attribute values can be updated in title blocks of reports and diagrams.

Project and User Administration

The Electrical Diagram Builder provides functions for the administration of:

- Projects, for example, create/delete/duplicate/export/import project
- Users, for example, create, delete, assign users, change password

Symbol Library Administration

Electrical Diagram Builder provides functions for the consistent administration of symbol and format libraries. Based on a specific report format, import and export of libraries is easy with the a batch-like functionality, based on user-definable lists. Via a split and merge functionality the compilation of the library contents can be tailored to the needs of the specific project. The contents of a library can be comfortable documented by a report. This applies to symbol and format libraries.

The Wiring Builder supports efficient wiring functions for electrical CAD in close connection with the Electrical Diagram Builder.

Functions

- Get connection information from circuit diagrams automatically
- Assign wire numbers/articles manually and/or use automatic rules for assigning wire numbers
- Assign cable numbers/articles manually
- Handling of preliminary cables and wires
- Create cable and connection reports.

3.7 Libraries

The following libraries are available for Advant Engineering Products.

3.7.1 Advant Object Library for Advant Controllers

The Advant Object Library for Advant Controllers contains examples of Advant Objects for different I/O modules and for entities like valves, motors, drive systems and control loops

3.7.2 Example Project

The Example Project is intended to help novice users to get familiar with the system and to get an explanation of the structuring principles and working procedures together with the “Engineering Methods User’s Guide”. It includes examples with different Advant Objects taken from the Advant Object Library which can be used as starting point for the creation of own projects.

3.7.3 AMPL PC and DB Element Libraries

See Section 3.4.2, Function Chart Builder,AMPL PC and DB Element Libraries

3.7.4 CAEE Libraries

Symbol Library

The basic symbol library for the Electrical Diagram Builder includes the most relevant symbols according for circuit diagrams according to the current standards

- IEC113 (circuit diagram symbols according IEC113)
- IEC1082 (circuit diagram symbols according IEC1082)
- ANSI32.2/IEEE 315.

These include variety of symbols, for example for

- Relay coils and contacts
- Motors
- Sensors, transmitters, transducers
- Signalling devices
- Main circuit switches
- Fuses
- Terminals.

The CAEE Libraries supply the following symbol libraries for the Electrical Diagram Builder - Wiring Builder:

- IEC617 (library with graphical primitives according IEC617)
- IEC11714 (circuit diagram symbols based on IEC11714 listed and named acc. to IEC617)
- CIAD (common IAD Library, based on IEC1174 and IEC 617).

The CAEE Libraries supply the following basic format libraries for the Electrical Diagram Builder - Wiring Builder:

- IEC formats (IEC1082-1 and ISO 7200) for different paper sizes according to ABB corporate standard
- DIN (DIN6771-T5) formats for different paper sizes according to ABB corporate standard.

Rules and Guidelines are given to simplify building, naming and structuring of symbols, composed symbols, and formats.

Chapter 4 Hardware Components

This section describes the engineering station hardware and the hardware delivered with the engineering station as well as the software products requirements on the existing hardware.

4.1 Advant Station 100 Series Engineering Station

Advant Station 100 Series Engineering Station is based on IBM PC-compatible personal computers, suitable for industrial environments and satisfies the Advant OCS environmental specifications as stated in the Advant OCS Overview Product Guide.

Advant Station 100 Series Engineering Stations contain Windows NT as well as AMPL Control Configuration, option On-line Builder and option AMPL PC and DB Element Libraries software already installed.

Advant Controller 160, Advant Controller 110, Advant Controller 70 and Advant Controller 55 are connected via a standard RS-232 PC port. All other target systems are connected via an Advant Station 100 Series Engineering Board; part of the engineering station. Cables for connection to target systems, a special connector and an installation guide are included.

Software for support of Advant Controller 400 Series, Advant Controller 110, Advant Controller 70, Advant Controller 55, Advant Operator Workplace and MasterGate 230/1 are included in the basic engineering station. For more information, see the Advant Station 100 Series Engineering Station Functions section in the Software section.

Advant Station 100 Series Engineering Stations are available in two different variants:

- Advant Station 120 Engineering Station (PCI)
- Advant Station 130 Engineering Station (ISA)

Equipment	Advant Station 120 Engineering Station	Advant Station 130 Engineering Station
Display, VGA- and VESA-compatible	12.1” color active TFT liquid crystal display, adjustable brightness, resolution up to 1024 x 768 pixels	
CPU	Mobile Pentium II with 266 MHz clock frequency	Pentium with 166 MHz clock frequency
CPU cache	Integrated primary 16 kByte instruction cache and 16 kByte write back data, integrated 512 kByte pipelined burst second level cache.	16 kByte (8 kByte instruction + 8 kByte data) + 256 kByte pipelined burst second level cache
Memory	64 MByte main memory	
Hard disk	4 GByte enhanced IDE	2.1 GByte enhanced IDE
Diskette drive	3.5”, 1.44 MByte	
CD-ROM drive	min. 20 x speed	-

Equipment	Advant Station 120 Engineering Station	Advant Station 130 Engineering Station
Interfaces	2 serial RS232 PS/2 keyboard and mouse interface Parallel interface (Centronics) Parallel interface (ECP/EPP) Interface for external monitor, VGA and VESA compatible Thin wire Ethernet Adapter with 10/100Base-T connector USB interface Engineering board PU516 with following communication interfaces to target system: • serial • MB300	2 serial RS232, SCSI-2 external PS/2 keyboard and mouse interface Parallel interface (Centronics) Interface for external monitor, VGA and VESA compatible Engineering board DSPU131 with serial communication interface to target system.
Slots	1 long PCI slot used by AS 100EB-PCI PCMCIA Standard 2.1: 2 slots type I/II or 1 slot type III 4 unused slots for: 2 long PCI (internal), 1 long ISA, 1 short ISA	1 long ISA slot used by AS 100EB-ISA. PCMCIA Standard 2.0: 2 slots type I/II or 1 slot type III
Keyboard	US keyboard, 84 keys, 12 function keys, 12 system hot keys, detachable, MFII compatible, integrated trackball	
System Monitoring	Temperature, voltage and fan monitoring, watchdog	Temperature, voltage, battery buffer loading, clock speed, counter of operating hours
Housing	Magnesium die cast	Magnesium die cast with add-on ventilation
Carrying bag	Included	
Cable for target system connection	Serial	
AC Power Supply	For use within one of the following mains voltage ranges: • 115V (120V for AS 130ES) +10%, -15%; 50..60 Hz ±6% • 230V +10%, -15%; 50/60 Hz ±6%	
DC Power Supply	-	DC connector is not tested by ABB. (1)
Case dimensions	460 mm x 400 mm x 143 mm (18.1” x 15.7” x 5.6”)	385 mm x 300 mm x 82 mm (15.2” x 11.8” x 3.2”)
Weight	11 kg (24.4 lb.)	7.5 kg (16.7 lb.)

(1) Use of DC power supply is not permitted for applications in ABB Master and Advant systems. The DC connector is covered and marked with symbol ISO 3864 No B.3.1 “Caution (refer to accompanying documents)”. The cover is only removable with a key or tool. If used in other applications than ABB Master and Advant, it is in full responsibility of the user. For more information about this connector refer to IN Lite User Manual.

4.2 Advant Station 100 Series Engineering Board

The Advant Station 100 Series Engineering Board is a package, that together with AMPL Control Configuration allows a suitable IBM PC-AT-compatible personal computer to be used as engineering station for Advant OCS. For requirements on an appropriate host personal computer for the engineering station, please refer to text further down.

Advant Station 100 Series Engineering Board consists of:

- The Engineering Board, which is required for communication with all types of target systems except Advant Controller 110, Advant Controller 70 and Advant Controller 55.
- Cables for connection to target systems and a special connector
- Installation guide
- No software included

Two types of Engineering Boards are available:

- PU516 for connection to PCI bus; requires a full length PCI slot
- DSPU131 for connection to ISA bus; requires a free AT-size ISA slot

An appropriate host personal computer for the engineering board and the AMPL Control Configuration software must fulfill - depending on the environment in which it is used - the following requirements:

- Alternative 1: On- and off-line use in industrial environment. The personal computer has to fulfill the requirements stated in the section “Environmental Immunity” of Advant OCS Overview with Master Software Product Guide and the following standards:

– EN 50081-1	EMC, Emission
– EN 50082-2	EMC, Immunity
– EN 60950	Electrical safety

- Alternative 2: Only off-line use in residential, commercial and light industrial environment; on-line use is not permitted. The personal computer has to fulfill the following standards:

– EN 50081-1	EMC, Emission
– EN 50082-1	EMC. Immunity
– EN 60950	Electrical safety

Further requirements for both alternatives:

- IBM/PC compatible PC, with at least 90 MHz Pentium CPU
- At least 32 MByte RAM and at least 800 MByte hard disk
- 1.44 MByte 3.5" diskette drive
- At least a VGA graphics adapter
- One port for mouse or trackball connection
- One serial communication port for Advant Controller 110/70/55 connection

- One free expansion slot (PCI or ISA, depending on engineering board type)
- A PCMCIA slot is needed when On-line Builder is used to write an application dump for the Advant Controller 400 Series to a PCMCIA card[1]
- Microsoft Windows NT 4.0
- Additional requirements, depending on the board type, are listed in the following chapters.

NOTE

Even though all reasonable efforts have been made to make certain that the engineering board works on all computers meeting these specifications, responsibility for compatibility in each individual case cannot be assumed. Even if all this conditions are given the Engineering Boards DSPU131 and PU516 may not work properly in some third party PCs.

If working on-line connected to target systems, it must be verified that the personal computer used and its add-on boards and peripherals fulfill the mechanical, temperature and electrical requirements, as stated in section “Environmental Immunity” in the Advant OCS Overview with Master Software Product Guide. Advant Station 100 Series Engineering Stations and their peripherals fulfill these requirements.

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1. FFS-2 file system is used, when writing application dump to PCMCIA cards. A driver which supports FFS-2 file format is needed. It is neither part of the operating system nor On-line Builder, but is available from third party suppliers or from the supplier of the PCMCIA adapter. The availability of the driver should be checked with the supplier of the personal computer. On-line Builder has been tested with the following software:
CardWare(r) 5.0 for Windows NT4 from Award Software (used on NT), CardWizard(r) from System Soft (used on Windows 3.11), CardTalk(r) from Databook Inc. (used on Windows 3.11 and AS 130ES with 80486 processor only)

4.2.1 The Engineering Board - PCI (PU516)

The engineering board PU516 is based on PCI technology and is a high performance microcomputer that executes the major part of the On-line Builder commands, controls the communication to the target systems and shares the peripherals of the engineering station, such as the display and the keyboard.

The Engineering Board - PCI is supported by AMPL Control Configuration software only, not by AdvaBuild for Windows.

The engineering board is equipped with:

- A 32-bit microprocessor, Motorola MC68040
- 16 MByte RAM
- Serial interface for target system connection
- MB300 interface for target system connection
- Clock circuits
- Supervision functions
- Communication channels.

The dimensions of the engineering board are: 4.2” x 12.283” (106.68 mm x 312 mm).

The maximum power requirements for the engineering board are

- +5V 13W, +12V 1.5W without connection to MB300 transceiver.
- +5V 13W, +12V 7.5W when connected to MB300 transceiver.

4.2.2 The Engineering Board - ISA (DSPU131)

The engineering board DSPU131 is based on ISA technology and is a high performance microcomputer that executes the major part of the On-line Builder commands, controls the communication to the target systems and shares the peripherals of the engineering station, such as the display and the keyboard.

The engineering board is equipped with:

- A 32-bit microprocessor, Motorola MC68020
- 4 Mbyte RAM
- Serial interface for target system connection
- Clock circuits
- Supervision functions
- Communication channels.

The dimensions of the engineering board are: AT size, long, XT high: 334.6 mm x 107.5 mm.

The power requirements for the engineering board are
+5V 1.6 A, +12V 25 mA and -12V 25 mA.

The Advant Station 100 Series Engineering Board - ISA has the following requirements

- The BIOS of this PC allows ISA boards to use the memory area C8000-CBFFF
- The memory area at C8000-CBFFF is not occupied by any other hardware
- The memory area at C8000-CBFFF is not cashed, shadowed, swapped or moved by the BIOS
- The I/O addresses required by the DSPU131 are available (default is 4 byte at 320 hex)

NOTE

There are many PCs that fulfill the requirements stated above, but the BIOS sometimes uses the memory temporarily for other purposes. Then the board does not work. Such a behavior cannot be recognized neither from the BIOS setup nor from other parameters easily accessible. The only way to make sure that the board is running in a new third party PC is to test the PC together with the board.

NOTE

It’s not possible to use the engineering board DSPU131 in a PC of type Advant Station 120 Engineering Station (PCI).

Chapter 5 Product Configuration Examples

See examples in Section 2.6, Architectural Overview.

Chapter 6 Mechanical Design

Not applicable.

Chapter 7 Environmental Immunities

See the chapter Environmental Immunity in *Advant OCS with Master software Overview Product Guide.*

Chapter 8 Technical Data and Performance

8.1 Requirements for AdvaBuild Engineering Software

To run AdvaBuild Engineering Software under Windows NT on a PC, certain requirements must be fulfilled.

8.2 Working Environment

AdvaBuild Engineering Software is designed to support a client / server configuration. Client and server part can be installed on:

- One single PC (local configuration). In this case both client and server are installed on one PC. This configuration can be used by only one person at a time.
- Different PCs in a network (network configuration). In this case the client and the server part are installed on different PCs in a network environment. The number of clients that can be connected to one server depend mainly on:
  - The application load (for example Electrical Diagram Builder requires quite high resources from the server)
  - The load profile. Two major categories are to be distinguished:

    Batch oriented activities (for example import data, create project, copy a large subtree of objects) with higher demands on the server PC, and

    Interactive work (for example create object/aspect, open aspect and edit)
  - The CPU power, the memory available and the disk access time of the server configuration.
  - The network load.

As experience shows up to 5 client PCs (3 client PCs when working with Electrical Diagram Builder) with an interactive load profile can be operated in parallel towards a server. Depending on the actual load profile up to 10 client PCs can be connected to a high end server.

There is actually no built-in license handling limitation for AdvaBuild Engineering Software regarding the number of client PCs working against a server PC. If more then 10 clients should be connected to a server we recommend to perform a load test in the specific environment.

8.2.1 Hardware and Software Requirements for a Server PC

Minimum Hardware Requirements

- IBM PC-AT compatible personal computer with at least 150 MHz Pentium CPU
- 128 MByte RAM or more; 64 MByte of RAM may be enough when **not** working with Computer Aided Electrical Engineering and lower performance could be tolerated

- 1.44 MByte 3.5” diskette drive
- CD-ROM drive
- At least 2 GByte hard disk. Three large and fast hard disks can be used to increase performance especially for CAEE.
- At least 2 MByte graphics adapter
- One port for mouse or trackball connection
- Network adapter card

Recommended Hardware

Especially when working with the CAEE the following hardware is recommended:

- Intel Pentium III processor 600 MHz, 512 kByte second level ECC cache
- 1 GByte, 100MHz SDRAM
- 1.44 MByte 3.5” diskette drive
- 40X Max CD-ROM drive
- Dual-Channel Wide-Ultra SCSI-3 controller
- Ultra2-Wide-SCSI 10,000rpm hard drives
  - 2* 4 GByte (system and temp files)
  - 9 GByte (database and files)
- 8MByte graphics adapter, 1280 x 1024 resolution at 85 Hz
- 17’’ monitor
- One port for mouse or trackball connection
- network adapter card

Software

- Microsoft Windows NT 4.0 Server US English
- NTFS file system is required
- TCP/IP network

NOTE

For details about dependencies on 3rd party software please refer to Section 9.2, Advant Engineering Products Price List in the respective ’Requires’ column for the particular product.

8.2.2 Hardware and Software Requirements for a Client PC

Minimum Hardware Requirements

- IBM PC-AT compatible personal computer with at least 150 MHz Pentium CPU
- 128 MByte RAM or more; 32 MByte of RAM may be enough when **not** working with Computer Aided Electrical Engineering and lower performance could be tolerated
- 1.44 MByte 3.5” diskette drive
- CD-ROM drive or connection to a CD-ROM drive via network
- At least 2 GByte hard disk.
- At least 2 MByte graphics adapter, 1024 x 768 resolution, a 4 MByte or more graphics adapter, 1280 x 1024 resolution is recommended when working with Computer Aided Electrical Engineering.
- One port for mouse or trackball connection
- One parallel or serial port for the printer when not printing via a network printer
- Network adapter card

Recommended Hardware

Especially when working with the CAEE the following hardware is recommended:

- Pentium II processor 450 MHz, 512 kByte second level ECC cache
- 256 MByte, 100 MHz SDRAM
- 1.44 MByte 3.5” diskette drive
- 40X Max CD-ROM drive or connection to a CD-ROM drive via network
- 2 GByte hard disk Ultra-DMA/66 or Ultra2-Wide-SCSI, 7,200 rpm
- 8MByte graphics adapter, 1280 x 1024 resolution at 85 Hz
- 19’’ monitor
- One port for mouse or trackball connection
- One parallel or serial port for the printer when not printing via a network printer
- network adapter card

Software

- Microsoft Windows NT 4.0 Workstation
- NTFS file system is required
- TCP/IP network.

NOTE

For details about dependencies on 3rd party software please refer to Section 9.2, Advant Engineering Products Price List in the respective ’Requires’ column for the particular product.

8.2.3 Hardware and Software Requirements for a Standalone PC

For the requirements to be fulfilled for a standalone PC with AMPL Control Configuration used for controller configuration and commissioning, when working on-line with a controller see Section 4.2, Advant Station 100 Series Engineering Board.

Chapter 9 Ordering

9.1 Price List Structure

The different Advant Engineering Products must be ordered from the following price lists. These price lists are part of price book Advant OCS, Master SW, Engineering.

Advant Engineering Products are offered in 2 price lists:

- Advant Engineering Products price list
- Computer Aided Electrical Engineering price list

Both price lists exist in an initial version and in an upgrade version. In addition an upgrade price list for former Advant Engineering Products running under Windows 3.11 exists. More price lists may be added in future versions.

Advant Engineering Products

Advant Engineering Products, covering Advant Engineering Workplace and AMPL Control Configuration and their options, as well as Engineering Stations:

- Engineering Stations
  - Advant Station 100 Series Engineering Station consists of an Advant Station 120 or 130, including the corresponding software for Advant Controller 400 Series and Advant Controller 100 Series configuration
  - Advant Station 100 Series Engineering Board (PCI or ISA) consists of the engineering board and cables for connecting a PC to an Advant Controller 400 Series
- AdvaBuild Engineering Software
  - Includes all software products as described in Section 9.2.2, AdvaBuild Engineering Software for NT - Licenses. For a certain functionality needed, a set of products can be selected

In addition the price list contains Standard Solutions, Expert Utilities and AF 100 Interface, as well as cables, printers and documentation

Computer Aided Electrical Engineering

This price list covers Computer Aided Electrical Engineering licenses and media.

NOTE

For a better understanding, typical engineering packages consisting of several products are listed as examples in Section 9.8, Examples of AdvaBuild Engineering Software Packages.

Upgrade Advant Engineering Products

Contains upgrade licenses and media to Advant Engineering Workplace 1.2, to AMPL Control Configuration 1.6 and to Expert Utilities 2.6. Upgrade to AMPL Control Configuration 1.6 covers also upgrade from AdvaBuild for Windows.

Update media are also offered in that price list.

Upgrade Computer Aided Electrical Engineering

Contains upgrade licenses and media to Computer Aided Electrical Engineering 3.1. In addition update media are offered.

Upgrade Advant Engineering Products /Win 3.11

Contains not only upgrade licenses and media to Advabuild for Windows 1.5, but also initial licenses and media for Advabuild for Windows 1.5 and Expert Utilities. In addition update media are offered.

NOTE

Upgrade licenses and media are necessary, if you own a version v.w of an Advant Engineering Product and you want to use a newer version x.y of that product. Upgrade licenses have a lower price than initial licenses.

Update media are necessary, if you own a version v.w/x of an Advant Engineering Product and you want to use a newer revision v.w/y of that product. Updates do not require new licenses.

9.2 Advant Engineering Products Price List

9.2.1 Engineering Stations

Table 9-1. Engineering Stations

Product	Consists of	Requires
Advant Station 120 Engineering Station for Windows NT	Industrial PC , Mobile Pentium II 266 MHz, 12,1” TFT color display, 64 MB RAM, 4GB HD, CD-ROM drive, Ethernet adapter 10/100 Base-T, PCMCIA slots, Windows NT 4, AS 100 Series Engineering Board - PCI; Licences: AMPL Control Configuration and Option On-line Builder for 1 user; Media: AdvaBuild Engineering Software CD1 + CD4.	
Advant Station 130 Engineering Station for Windows NT	Industrial PC Pentium 166 MHz, 12,1” TFT color display, 64 MB RAM, 2 GB HD, PCMCIA slots, Windows NT 4, AS 100 Series Engineering Board - ISA; Licences: AMPL Control Configuration and Option On-line Builder for 1 user; Media: AdvaBuild Engineering Software CD1 + CD4.	
Advant Station 100 Series Engineering Board - PCI	AS 100 Series Engineering Board - PCI, cables and installation guide; no software	An appropriate PC, AMPL Control Configuration software and options
Advant Station 100 Series Engineering Board - ISA	AS 100 Series Engineering Board - ISA, cables, installation guide and functional Test guide.; no software	An appropriate PC, AMPL Control Configuration software and options

9.2.2 AdvaBuild Engineering Software for NT - Licenses

AdvaBuild Engineering Software products are available as multiple licenses for

- The 1st user
- The 2nd user
- The 3rd to 5th user
- The 6th to 10th user
- The 11th to 15th user
- The 16th to 20th user.

If, for example, two users are going to work with the software, the first and second license must be ordered. If up to 15 user are going to work, the first, second, 3rd to 5th, 6th to 10th and 11th to 15th license must be ordered.

The software is distributed on several CD-ROMs. To install the software it is necessary to order a license and the corresponding media. Together with the license, a license key is delivered, which is necessary to install the software. If a medium was delivered earlier, it is not necessary to reorder it, as long as it is the same version. The version is indicated by a version identifier.

New: The Library “AMPL PC and DB Element Libraries” does not require any license!

For Expert Utilities license and media are combined into one single item in the price list.

9.2.2.1 Advant Engineering Workplace

Advant Engineering Workplace establishes the environment for AdvaBuild Engineering Software. A standard personal computer equipped with Microsoft Windows NT 4.0, which may be connected to a TCP/IP network, is by this product extended to an Advant Engineering Workplace. It sets up a client/server environment with a general data repository and a navigation tool, the Structure Builder, making it possible to navigate between Advant Objects in an easy and intuitive way and start other Builders on aspects of the selected Advant Object.

Table 9-2. Advant Engineering Workplace

Product	Consists of	Requires
Advant Engineering Workplace 1.2.	Structure Builder 3.2 Advant Engineering Server 1.1	Microsoft Windows NT 4.0 US English with TCP/IP
Option: Parameter Builder 3.2.	Parameter Builder 3.2.	Advant Engineering Workplace 1.2 Microsoft Access 97, international English version.
Option: Document Builder 3.2.	Document Builder 3.2.	Advant Engineering Workplace 1.2 Microsoft Office 97, international English version.

NOTE

If a product or option is used within an engineering project it has to be installed on all clients working on this project.

9.2.2.2 AMPL Control Configuration

AMPL Control Configuration includes all software necessary to configure Advant controllers. AMPL Control Configuration can be used in both cooperating mode and in independent mode.

In cooperating mode it requires Advant Engineering Workplace. In independent mode the built-in Application Builder will be used as navigation tool instead of Structure Builder.

Table 9-3. AMPL Control Configuration

Product	Consists of	Requires
AMPL Control Configuration 1.6	Application Builder 2.6 Function Chart Builder 4.6 Bus Configuration Builder 2.6	Microsoft Windows NT 4.0 US English Advant Engineering Workplace 1.2 when working in cooperating mode and one or both of the options.
Option: On-line Builder 2.6	On-line Builder 2.6 including libraries for all controllers supported (no reference manuals).	AMPL Control Configuration 1.6 Advant Station 100 Series Engineering Board.

NOTE

If a product or option is used within an engineering project it has to be installed on all clients working on this project.

To work with Function Chart Builder at least one controller library, for example AMPL PC and DB Element Libraries, must be installed. **The Library “AMPL PC and DB Element Libraries” does not require any license.**

9.2.3 AdvaBuild Engineering Software for NT - Media

AdvaBuild Engineering Software is delivered on CD ROM. The media must be ordered in addition to the licenses.

Table 9-4. AdvaBuild Engineering Software for Windows NT - Media

Product	Consists of
AdvaBuild Engineering Software CD1	Advant Engineering Workplace with Parameter Builder and Document Builder AMPL Control Configuration with On-line Builder
AdvaBuild Engineering Software CD2	Advant Engineering Server
AdvaBuild Engineering Software CD3	Advant Object Library for Advant Controllers and Example Project
AdvaBuild Engineering Software CD4	AMPL PC and DB Element Libraries

9.2.4 Additions

Additions are available, which extend the functionality for specific areas. The additions contain

- Standard Solutions for Drive Support
- Expert Utilities
- AF100 Interface for Windows NT

9.2.4.1 Standard Solutions (Type Circuits) for Drive Support

To minimize the engineering efforts for creating applications, type circuits are available.

- Drives FCB Type Circuits contain the control logic for both standard and engineered drives in a system with Advant Controller 400 Series. A user’s manual for the type circuits is available

No extra license is required for Standard Solutions.

Table 9-5. Type circuit for drives support

Title	Description	Supported in controller
Drives FCB Type Circuits.	Contains the type circuits for standard and engineered drives on 3.5" diskettes.	> Advant Controller 400 1.3
FCB Type Circuits Drives Objects User’s Guide.	User’s Guide describing FCB type circuits for standard and engineered drives.	

9.2.4.2 Expert Utilities

The Expert Utilities contain additional On-line Builder commands for extended fault tracing on Advant Controller 400 Series. Item Expert Utilities contains the license for 1 User and the media. The preconditions can be seen from the ’requires’ column of Table 9-6

Table 9-6. Expert Utilities for Windows NT

Product	Consists of	Requires
Expert Utilities 2.6	Expert commands for On-line Builder on diskette	On-line Builder 2.6

9.2.4.3 AF100 Interface for Windows NT

AF100 Interface for Windows NT allows direct access from a PC running AMPL Control Configuration to Advant Controller 100 Series other than Advant Controller 55 via Advant Fieldbus 100. The preconditions can be seen from the ’requires’ column of Table 9-7.

Table 9-7. AF100 Interface for Windows NT

Product	Consists of	Requires
AF100 Interface Software - License	Software license needed for AF100 Interface	Function Chart Builder and AF100 OPC Server HW and AF100 Interface software - Media
AF100 Interface Software Distribution Media	Software needed for AF100 Interface	AF100 Interface Software - License
AF100 Interface HW single twisted pair	Hardware needed for AF100 Interface	AF100 Interface Software
AF100 Interface HW redundant twisted pair	Hardware needed for AF100 Interface	AF100 Interface Software
AF100 Interface HW single coax bus cable	Hardware needed for AF100 Interface	AF100 Interface Software
AF100 Interface HW redundant coax bus cable	Hardware needed for AF100 Interface	AF100 Interface Software
Advant Fieldbus 100 User’s Guide/Rev A		

9.2.5 Cables

Cables are required to connect the PC running Advant Engineering Software to controllers or buses. Please refer to the description of the Engineering Stations in the price list to see, which cables are already included.

9.2.6 Printers

For compatibility reasons a Matrix Printer is offered. One version for 120V, 60Hz, the other for 230V.

9.2.7 Advant Engineering Products - User Documentation

Access to user documentation is possible via

- Advant OCS with Master SW User Documentation CD-ROM
- World Wide Web Access to Advant OCS Documentation for single user and for 5 users
- Ordering of manuals in printed version (see Table 9-8).

Reference Manuals for Data Base Elements and for PC Elements are part of AMPL PC and DB Element Libraries. They are stored as PDF files on AdvaBuild Engineering Software CD4.

Table 9-8. Documentation on Advant Engineering Products

Title	Description
Advant Station 100 Series Engineering Station User’s Guide	Describes the Advant Station 100 Series Engineering Station, including connection and start-up instructions.
On-line Builder Version 2.6 Reference Manual	Describes all On-line Builder commands.
On-line Builder Engineering Station Version 2.6 User's Guide	Describes how to use On-line Builder in AS 100 ES.
Application Builder Version 2.6 User’s Guide	Describes how to use Application Builder.
Bus Configuration Builder Version 2.6 User’s Guide	Describes how to use Bus Configuration Builder.
Function Chart Builder Version 4.6 User’s Guide	Describes AMPL application program configuration.
Source Code Handling User’s Guide	Descriptions and instructions for use of AMPL source code for programs and databases.
AMIS and Kermit User’s Guide	Describes how to use AMIS and Kermit.
AMPL Control Configuration Commands for Structure Builder Version 2.6 User’s Guide	Describes how to use AMPL Control Configuration together with Structure Builder.
Structure Builder Version 3.2 User’s Guide	Describes how to use Structure Builder.
Bulk Data Handling and Reuse Reference Manual	Describes the working with Structure Builder's Import/Export Functions
Document Builder Version 3.2 User’s Guide	Describes how to use Document Builder.
Parameter Builder Version 3.2 User’s Guide	Describes how to handle parameters for process objects and for OCS objects
Engineering Methods User’s Guide	Describes how to work with AdvaBuild Engineering Software.

Table 9-8. Documentation on Advant Engineering Products (Continued)

Title	Description
Advant Object Library for Advant Controllers Version 1.3 Reference Manual	Describes the content of Advant Object Library.
Advant Controller 110 PROFIBUS-DP User´s Guide	Describes how to build own PROFIBUS-DP DB element types and how to use them in Function Chart Builder, as well as how to work with PROFIBUS-DP on the controller in general.

9.3 Computer Aided Electrical Engineering

9.3.1 Computer Aided Electrical Engineering - Licenses

Please refer to Section 9.2.2, AdvaBuild Engineering Software for NT - Licenses

Additionally the licensing model distinguishes between *named user licenses* and *concurrent users*.

A *named user license* is a license that is locked to the user name (the Windows NT Login name of the user). When changing the users working with the products in the customer environment, a new license file is required. The named user license file is located on the license server. Only one license file per server is supported.

A *concurrent license* is the most flexible alternative for those who have different users working occasionally with the products. The product can be installed on any number of computers in the network. A license server controls the usage of the software and limits the no of concurrent users to the number of the acquired concurrent licenses.

Computer Aided Electrical Engineering supports the creation and administration of circuit diagrams, loop diagrams, and layout diagrams. It consists of Electrical Diagram Builder-Wiring Builder.

Table 9-9. Computer Aided Electrical Engineering

Product	Consists of	Requires
Computer Aided Electrical Engineering 3.1	Electrical Diagram Builder 3.1 - Wiring Builder 3.1	Microsoft Windows NT 4.0 US English with TCP/IP AutoCAD 14 international English, Microsoft Office 97, international English version.

9.3.2 AdvaBuild Engineering Software (CAEE) for NT - Media

AdvaBuild Engineering Software for Computer Aided Electrical Engineering is delivered on CD ROM. The media must be ordered in addition to the licenses.

Table 9-10. AdvaBuild Engineering Software (CAEE) for Windows NT - Media

Product	Consists of
AdvaBuild Engineering Software CD1	Advant Engineering Workplace with Parameter Builder and Document Builder AMPL Control Configuration with On-line Builder
AdvaBuild Engineering Software CD2	Advant Engineering Server
AdvaBuild Engineering Software CD5	Computer Aided Electrical Engineering
AdvaBuild Engineering Software CD6	CAEE Libraries

9.4 Upgrade Advant Engineering Products

Upgrade of Advant Engineering Products is offered for AdvaBuild Engineering Software, upgrade of Engineering Stations is not supported.

Upgrade to Advant Engineering Products is possible as:

- Upgrade from previous AdvaBuild Engineering Software (Windows NT) versions
- Upgrade from previous AdvaBuild for Windows (Windows 3.11) versions.

To upgrade to a new version of an AdvaBuild Engineering Software product, a previous version must have been ordered before. It is only possible to upgrade the same number of users which have been ordered before. Licenses and Media must be ordered. Supplementary licenses begin with the next range in the stagger mentioned in Section 9.2.2, AdvaBuild Engineering Software for NT - Licenses.

For possible updates to newer revisions update media are also included in this price list.

9.4.1 Advant Engineering Workplace Upgrade

9.4.1.1 Advant Engineering Workplace Upgrade - Licenses

Table 9-11. AdvaBuild Engineering Software Upgrade

Product	**Consists of**	**Requires**
Advant Engineering Workplace 1.2. Upgrade	Structure Builder 3.2 Advant Engineering Server 1.1	Advant Engineering Workplace 1.0 or 1.1
Option: Parameter Builder 3.2 Upgrade	Parameter Builder 3.2	Parameter Builder 3.0 or 3.1
Option: Document Builder 3.2 Upgrade	Document Builder 3.2	Document Builder 3.0 or 3.1

9.4.1.2 Advant Engineering Workplace Upgrade - Media

Table 9-12. AdvaBuild Engineering Software Upgrade - Media

Product	Consists of
AdvaBuild Engineering Software CD1	Advant Engineering Workplace with Parameter Builder and Document Builder AMPL Control Configuration with On-line Builder
AdvaBuild Engineering Software CD2	Advant Engineering Server

9.4.2 AMPL Control Configuration Upgrade

9.4.2.1 AMPL Control Configuration Upgrade - Licenses

Table 9-13. AMPL Control Configuration Upgrade

Product	Consists of	Requires
AMPL Control Configuration 1.6 Upgrade	Application Builder 2.6 Function Chart Builder 4.6 Bus Configuration Builder 2.6	AMPL Control Configuration 1.x or AdvaBuild for Windows 1.x or AdvaBuild for Windows; AC55/70/110 version 1.x
Option: On-line Builder 2.6 Upgrade	On-line Builder 2.6 including libraries for all controllers supported (no reference manuals).	On-line Builder 2.x or AdvaBuild for Windows 1.x

9.4.2.2 AMPL Control Configuration Upgrade - Media

Table 9-14. AdvaBuild Engineering Software Upgrade - Media

Product	Consists of
AdvaBuild Engineering Software CD1	Advant Engineering Workplace with Parameter Builder and Document Builder AMPL Control Configuration with On-line Builder
AdvaBuild Engineering Software CD4	AMPL PC and DB Element Libraries

9.4.3 Upgrade from AdvaBuild for Windows

Two upgrade packages are available, to mirror the contents of the two existing AdvaBuild for Windows versions. As the packages fit to the AdvaBuild for Windows version, they include both licenses and media. Upgrades are only possible for the same number of users. The license packaging for AdvaBuild for Windows and the AMPL Control Configuration differs. Therefore it may be necessary to order more than one of the license packages to make the number of users fit to the number of users in AdvaBuild for Windows.

Table 9-15. AMPL Control Configuration Upgrades 1 and 2

Product	Consists of	Requires
AMPL Control Configuration 1.6 Upgrade 1.	AMPL Control Configuration 1.6, Option On-line Builder 2.6, AMPL PC and DB Element Libraries 1.2 Media: AdvaBuild Engineering Software CD1 + CD4	AdvaBuild for Windows or MasterAid 220 software
AMPL Control Configuration 1.6 Upgrade 2.	AMPL Control Configuration 1.6, Option AMPL PC and DB Element Libraries 1.2 Media: AdvaBuild Engineering Software CD1 + CD4	AdvaBuild for Windows; AC 110/70/55 Version or MasterAid 220 software for MP 90 or AC 110

9.4.4 Advant Object Library and Example Project Upgrade - Media

Table 9-16. Advant Object Library and Example Project Upgrade - Media

Product	Consists of
AdvaBuild Engineering Software CD3	Advant Object Library for Advant Controllers and Example Project

9.4.5 Expert Utilities Upgrade - License and Media

Table 9-17. Expert Utilities Upgrade - License and Media

Product	Consists of	Requires
Expert Utilities 2.6 Upgrade	License (1 user) and media (diskette)	Expert Utilities x.y

9.5 Upgrade Computer Aided Electrical Engineering

To upgrade to a new version of an Computer Aided Electrical Engineering, a previous version must have been ordered before. It is only possible to upgrade the same number of users which have been ordered before. Licenses and Media must be ordered. Supplementary licenses begin with the next range in the stagger mentioned in Section 9.2.2, AdvaBuild Engineering Software for NT - Licenses.

For possible updates to newer revisions update media are also included in this pricelist.

9.5.1 Computer Aided Electrical Engineering Upgrade- Licenses

Table 9-18. Computer Aided Electrical Engineering - Licenses

Product	**Consists of**	**Requires**
Computer Aided Electrical Engineering 3.1	Electrical Diagram Builder 3.1 - Wiring Builder 3.1	Electrical Diagram Builder 3.0/1

9.5.2 Computer Aided Electrical Engineering Upgrade- Media

Table 9-19. Computer Aided Electrical Engineering - Media

Product	**Consists of**
AdvaBuild Engineering Software CD5	Computer Aided Electrical Engineering with Electrical Diagram Builder - Wiring Builder

9.6 Upgrade Advant Engineering Products /Win 3.11

Last version of AdvaBuild for Windows, version 1.5, was released beginning of 1998. There is no further development of AdvaBuild for Windows. The successor of AdvaBuild for Windows (3.11) is AMPL Control Configuration (running under Windows NT). Latest controller versions supported by AdvaBuild for Windows 1.5 are

- AC 55 1.1
- AC 70 1.1
- AC 110 2.2
- AC 410 1.3
- AC 450 2.1

If you intend to upgrade from AdvaBuild for Windows it’s recommended to upgrade to AMPL Control Configuration (please refer to price list Upgrade Advant Engineering Products, see Section 9.4.3, Upgrade from AdvaBuild for Windows)

To upgrade to AdvaBuild for Windows 1.5, a previous version must have been ordered before. It is only possible to upgrade the same number of users which have been ordered before. Licenses and Media must be ordered.

For possible updates to newer revisions update media are also included in this price list.

The price list Upgrade Advant Engineering Products /Win 3.11 contains not only upgrade and update licenses and media to Advabuild for Windows 1.5, but also initial licenses and media for Advabuild for Windows 1.5 and Expert Utilities.

9.7 Libraries

The following libraries are available

- AMPL PC and DB Element Libraries
- Advant Object Library for Advant Controllers
- Example Project
- CAEE Libraries

NOTE

Libraries do not require any license.

9.7.1 AMPL PC and DB Element Libraries

AMPL PC and DB Element Libraries cover the PC and DB elements for the systems listed in Table 9-20 for use in Function Chart Builder..

Table 9-20. AMPL PC and DB Element Libraries

Product	Consists of	Requires
AMPL PC and DB Element Libraries 1.2	PC and DB Elements for Advant Controller 450, 410, 160, 110, 70, 55, MasterPiece 200/1and AdvaSoft for Windows 1.x, Reference Manuals in PDF format	AMPL Control Configuration 1.6

Libraries for Advant Controller 80 and ACS 600 are supported by

ABB Industry Oy
Drives
P. O. Box 184
FIN - 00381 Helsinki
Finland
Telephone +358 10 222 000
Telefax +358 10 222 2681
Internet http://www.abb.fi/vsd/index.htm

NOTE

It is not possible to use Function Chart Builder without any library.

9.7.2 Advant Object Library for Advant Controllers

The Advant Object Library for Advant Controllers 1.3 contains examples of Advant Objects for different I/O modules and for entities like valves, motors, drive systems and control loops. The preconditions can be seen from the ’requires’ column of Table 9-21.

Table 9-21. Advant Object Library for Advant Controllers

Product	Consists of	Requires
Advant Object Library for Advant Controllers 1.3	Examples of Advant Objects for different I/O modules and for entities like valves, motors, drive systems and control loops	Advant Engineering Workplace 1.1 or 1.2, AMPL Control Configuration 1.6 (if applicable), Computer Aided Electrical Engineering 3.1 (if applicable)

9.7.3 Example Project

The Example Project 1.3 contains an example project showing and helping to learn the structuring principles and working procedures. The preconditions can be seen from the ’requires’ column of Table 9-22.

Table 9-22. Example project

Product	Consists of	Requires
Example Project 1.3	Example of structuring principles and working procedures.	Advant Object Library for Advant Controllers 1.3 Engineering Methods User’s Guide, Advant Engineering Workplace 1.1 or 1.2, AMPL Control Configuration 1.6 (if applicable), Computer Aided Electrical Engineering 3.1 (if applicable)

9.7.4 CAEE Libraries

The ’CAEE libraries’ contain the symbol and format libraries for Electrical Diagram Builder-Wiring Builder. The CAEE Libraries are delivered on AdvaBuild Engineering Software CD6. The preconditions can be seen from the ’requires’ column of Table 9-23

Table 9-23. Utility: CAEE Libraries

Product	Consists of	Requires
CAEE Libraries 3.1	CAEE Libraries 3.1	Electrical Diagram Builder 3.1 - Wiring Builder 3.1

9.8 Examples of AdvaBuild Engineering Software Packages

Typical product packages of AdvaBuild Engineering Software for Windows NT are described. A package is not a simple product, but an example of which products and options need to be ordered for a certain project type.

9.8.1 Advant Controller Configuration Package

It is assumed that the AdvaBuild Engineering Software will be installed on one single PC locally. In addition

- Function Chart Builder may be installed on a second PC for remote communication only
- On-line Builder may be installed on a second PC for remote communication only
- Bus Configuration Builder may be installed on a second PC for access to a remote Bus Configuration Database.

Table 9-24. Advant Controller Configuration Package

Product	License	Media
AMPL Control Configuration 1.6	One 1st user license	AdvaBuild Engineering Software CD1
Option: On-line Builder 2.6 (Not required for configuration of Advant Controller 160/110/70/55)	One 1st user license	AdvaBuild Engineering Software CD1 Remark: On-line Builder requires an Advant Station 100 Series Engineering Board
AMPL PC and DB Element Libraries 1.2	-	AdvaBuild Engineering Software CD4

The following manuals should be ordered in addition

- On-line Builder Version 2.6 Reference Manual
- On-line Builder Engineering Station Version 2.6 User's Guide
- Application Builder Version 2.6 User’s Guide
- Bus Configuration Builder Version 2.6 User’s Guide
- Function Chart Builder Version 4.6 User’s Guide
- Source Code Handling User’s Guide

9.8.2 Advant OCS Package

It is assumed that the project consists of two team members performing Advant controller configuration and that each team member has its own workplace and that they share one server PC for data storage. No extra license is necessary for the server.

Table 9-25. Advant OCS package

Product	License	Media
Advant Engineering Workplace 1.2	One 1st user license, One 2nd user license	AdvaBuild Engineering Software CD1 + AdvaBuild Engineering Software CD2
Option: Parameter Builder 3.2	One 1st user license, One 2nd user license	AdvaBuild Engineering Software CD1
Option: Document Builder 3.2	One 1st user license, One 2nd user license	AdvaBuild Engineering Software CD1
AMPL Control Configuration 1.6	One 1st user license, One 2nd user license	AdvaBuild Engineering Software CD1
Option: On-line Builder 2.6 (Not required for configuration of Advant Controller 160/110/70/55)	One 1st user license, One 2nd user license	AdvaBuild Engineering Software CD1 Remark: On-line Builder requires an Advant Station 100 Engineering Board
Advant Object Library 1.3 and Example Project 1.3	-	AdvaBuild Engineering Software CD3
AMPL PC and DB Element Libraries 1.2	-	AdvaBuild Engineering Software CD4

The following manuals should be ordered in addition

- On-line Builder Version 2.6 Reference Manual
- On-line Builder Engineering Station Version 2.6 User's Guide
- Application Builder Version 2.6 User’s Guide
- Bus Configuration Builder Version 2.6 User’s Guide
- Function Chart Builder Version 4.6 User’s Guide
- Source Code Handling User’s Guide
- Document Builder Version 3.2 User’s Guide
- Parameter Builder Version 3.2 User’s Guide
- Bulk Data Handling and Reuse Reference Manual
- AMPL Control Configuration Commands for Structure Builder Version 2.6 User’s Guide
- Structure Builder Version 3.2 User’s Guide
- Engineering Methods Reference Manual

- Advant Object Library for Advant Controllers Version 1.3 Reference Manual

9.8.3 Plant Engineering Package

It is assumed that the project consists of four team members. Two of them are performing Advant controller configuration while the two others work in addition with electrical CAD and wiring. Each team member has his/her own workplace. They share one server PC for data storage. For the server no extra license is necessary.

Table 9-26. Plant engineering package

Product	License	Media
Advant Engineering Workplace 1.2	One 1st user license, One 2nd user license One 3rd-5th user license	AdvaBuild Engineering Software CD1 + AdvaBuild Engineering Software CD2
Option: Parameter Builder 3.2	One 1st user license, One 2nd user license One 3rd-5th user license	AdvaBuild Engineering Software CD1
Option: Document Builder 3.2	One 1st user license, One 2nd user license One 3rd-5th user license	AdvaBuild Engineering Software CD1
AMPL Control Configuration 1.6	One 1st user license, One 2nd user license One 3rd-5th user license	AdvaBuild Engineering Software CD1
Option: On-line Builder 2.6 (Not required for configuration of Advant Controller 160/110/70/55)	One 1st user license, One 2nd user license	AdvaBuild Engineering Software CD1 Remark: On-line Builder requires an Advant Station 100 Series Engineering Board
Advant Object Library 1.3 and Example Project 1.3	-	AdvaBuild Engineering Software CD3
AMPL PC and DB Element Libraries 1.2	-	AdvaBuild Engineering Software CD4
Electrical Diagram Builder 3.1 - Wiring Builder 3.1	One 1st named/concurrent user license, One 2nd named/concurrent user license	AdvaBuild Engineering Software CD5
CAEE Libraries 3.1	-	AdvaBuild Engineering Software CD6

The following manuals should be ordered in addition

- On-line Builder Version 2.6 Reference Manual
- On-line Builder Engineering Station Version 2.6 User's Guide
- Application Builder Version 2.6 User’s Guide
- Bus Configuration Builder Version 2.6 User’s Guide
- Function Chart Builder Version 4.6 User’s Guide
- Source Code Handling User’s Guide
- Document Builder Version 3.2 User’s Guide
- Parameter Builder Version 3.2 User’s Guide
- Bulk Data Handling and Reuse Reference Manual
- AMPL Control Configuration Commands for Structure Builder Version 2.6 User’s Guide
- Structure Builder Version 3.2 User’s Guide
- Engineering Methods Reference Manual
- Advant Object Library for Advant Controllers Version 1.3 Reference Manual

Appendix A Targets Supported by AMPL Control Configuration

The following table is valid for the Builders included in AMPL Control Configuration.

Table A-1. Target versions supported

Control SW	**Delivered in**	**Function Chart Builder 4.6**		**On-line Builder 2.6**	**Bus Configuration Builder 2.6**
		off-line	**on-line**		
QC07*3.0	AC 450*2.2	yes		yes	yes
QC07*2.0	AC 450*2.1	yes		yes	yes
QC07*1.0	AC 450*2.0	yes		yes	yes
QC02*9.0	AC 450*1.2/1, *1.3	yes		yes	yes
QC02*8.0	AC 450*1.2/0	yes		yes	yes
QC02*7.0	AC 450*1.0, 1.1	yes		yes	yes
QC01*10.0	AC 410*1.4	yes		yes	yes
QC01*9.0	AC 410*1.2/x, *1.3	yes		yes	yes
QC01*8.0	AC 410*1.2/0 only	yes		yes	yes
QC01*7.0	AC 410*1.0, *1.1	yes		yes	yes
AC 110*2.3		yes	yes		yes
AC 110*2.2		yes	yes		yes
AC 110*2.1		yes	yes		yes
AC 110*2.0		yes	yes		yes
AC 70*1.2		yes	yes		yes
AC 70*1.1		yes	yes		yes
AC 70*1.0		yes	yes		yes
AC 55*1.1		yes	yes		yes
AC 55*1.0		yes	yes		yes
AF100 OPC					yes
AdvaSoft for Windows*1.3		yes			yes
AdvaSoft for Windows*1.2		yes			yes
AdvaSoft for Windows*1.1		yes			yes
*MP 200/1*4.0*		*yes*		*yes*	

Table A-1. Target versions supported

Control SW	**Delivered in**	**Function Chart Builder 4.6**		**On-line Builder 2.6**	**Bus Configuration Builder 2.6**
		off-line	**on-line**		
*MP 200/1*3.0*		*yes*		*yes*	
*MP 200/1*2.1*		*yes*		*yes*	
*MP 200/1*2.0*		*yes*		*yes*	

Appendix B AMPL Control Configuration Access Path to Targets

The following tables show the possibilities for access to remote targets by the Builders included in AMPL Control Configuration and AdvaBuild for Windows.

They show the path from the target where the tool is locally connected to (local target) via busses and other target systems to the remote target (remote target). The following way is used to describe it; target systems are written in bold: **local target** -> bus -> **target system** -> bus -> **remote target**. The access path starts with the local target and ends with the remote target. The “bus -> target system” sequences in between can occur repeatedly. Depending on the remote target system either Function Chart Builder or On-line Builder is used for the remote access.

Table B-1. Overview of tool access to remote Advant target systems

	Remote Advant Target Systems			
Locally Connected to	**AC 400 Series**	**AC 110**	**AC 70**	**AC 55**
AC 400 Series	**AC 400** -> MB 300 -> **AC 400**	**AC 400** -> AF 100 -> **AC 110** or **AC 400** -> AF 100 -> **AC 110** -> AF 100 -> **AC 110** or **AC 400** -> MB 300 -> **AC 400** -> AF 100 -> **AC 110** or **AC 400** -> MB 300 -> **AC 400** -> AF 100 -> **AC 110** -> AF 100 -> **AC 110** or **AC 400** -> RCOM -> **AC 110** or **AC 400** -> MB 300 -> **AC 400** -> RCOM -> **AC 110**	**AC 400** -> AF 100 -> **AC 70** or **AC 400** -> AF 100 -> **AC 110** -> AF 100 -> **AC 70** or **AC 400** -> MB 300 -> **AC 400** -> AF 100 -> **AC 70** or **AC 400** -> MB 300 -> **AC 400** -> AF 100 -> **AC 110** -> AF 100 -> **AC 70**	**AC 400** -> RCOM -> **AC 55** or **AC 400** -> MB 300 -> **AC 400** -> RCOM -> **AC 55**
MB 300	**AC 400**	**AC 400** -> AF 100 -> **AC 110** or **AC 400** -> AF 100 -> **AC 110** -> AF 100 -> **AC 110** or **AC 400** -> RCOM -> **AC 110**	**AC 400** -> AF 100 -> **AC 70** or **AC 400** -> AF 100 -> **AC 110** -> AF 100 -> **AC 70**	**AC 400** -> RCOM -> **AC 55**

Table B-1. Overview of tool access to remote Advant target systems (Continued)

	Remote Advant Target Systems			
Locally Connected to	**AC 400 Series**	**AC 110**	**AC 70**	**AC 55**
AC 110	-	**AC 110** -> AF 100 -> **AC 110** or **AC 110** -> AF 100 -> **AC 110** -> AF 100 -> **AC 110**	**AC 110** -> AF 100 -> **AC 70** or **AC 110** -> AF 100 -> **AC 110** -> AF 100 -> **AC 70**	-
AC 70	-	**AC 70** -> AF 100 -> **AC 110** or **AC 70** -> AF 100 -> **AC 110** -> AF 100 -> **AC 110**	**AC 70** -> AF 100 -> **AC 70** or **AC 70** -> AF 100 -> **AC 110** -> AF 100 -> **AC 70**	-
AC 55	-	-	-	-
AF 100 (via AF 100 Interface Software)		**AC 110** or **AC 110** -> AF 100 -> **AC 110**	**AC 70** or **AC 110** -> AF 100 -> **AC 70**	-
Advant Station 100 Series Engineering Station (via TCP/IP Network)	all possibilities	as listed in	that table are	supported

Table B-2. Overview of tool access to remote Master target systems

	Remote Master Target Systems		
Locally Connected Target System	**AC 400 Series**	**MG 230/1**	**MP 51**
MG 230/1		**MG 230/1** -> MB 300 -> **MG 230/1**	**MG 230/1** -> MB 300 -> **MP 200/1** or **AC 400 Series** -> MasterFieldbus -> **MP 51**
MP 51		-	-

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